# An Address
ON
# RENAL TUBERCULOSIS.

*Being the Presidential Address to the Section of Urology of the Royal Society of Medicine on Oct. 30th, 1924.*

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(WITH COLOURED PLATE.)

I HAVE selected the subject of renal tuberculosis because it has not yet been brought before the Section and because I have complete post-operative details of a number of cases. As limitations of time will not permit of a complete review, I have only selected certain aspects of the disease, some of which are open to differences of opinion, and I shall refrain from giving more than a brief summary of the cases I have investigated.

Judging from hospital records the disease is not nearly so common in this country as on the continent, for in the last 12 years only 47 cases of surgical tuberculosis of the kidney appear to have been admitted to St. Thomas's. This probably does not represent a true total, for doubtless during the war years a certain number of cases escaped the Registrar, and probably several with primary renal tuberculosis were admitted to the medical and gynæcological wards and both treated and recorded as tuberculous cystitis. Fortunately, owing to the work of urologists in this country, physicians and gynæcologists are becoming more enlightened, and within recent years have sought the aid of their surgical colleagues for cases of "cystitis" instead of treating them with urinary antiseptics and tuberculin.

## CLINICAL VARIETIES.

Renal tuberculosis is a disease of unusual interest because of the two distinct clinical varieties which we call medical and surgical respectively.

In the medical form the disease is bilateral, infection is nearly always hæmic, there is a coexistent parenchymatous nephritis, the urine is clear but contains tubercle bacilli, albumin of sanguineous origin, and hyaline and granular casts. Physical signs of chronic nephritis in the form of œdema with arterial and cardiac changes are often present and death from uræmia is not uncommon. The actual tubercles are scattered irregularly throughout the cortex and medulla, the greatest number being in the cortex, but as Bedo Hobbs has pointed out, though tubercles are often limited to the cortex they are seldom found in the medulla without a cortical lesion.

In the surgical form the disease is unilateral at the commencement, infection takes place by the blood- or lymph-streams, the urine is cloudy or turbid, and contains tubercle bacilli, pus cells, caseous material, fragments of renal tissue, phosphates, red blood corpuscles, and albumin of pyogenic origin. The focal lesions are limited in number and undergo caseation and liquefaction, forming an open or closed tuberculous abscess. The pathological anatomy is similar in its essentials to that of the medical form, but differs in degree, and will be discussed more fully later on.

It is curious that two types should exist with such wide clinical differences, the one with multiple tubercles and albuminuria, and the other with a limited number of tubercles and pyuria. I am inclined to think that the difference is only one of degree. In the medical form, the resistance of the kidney is lowered by a toxic inflammation which accounts for the albumin in the urine, and by frequent assaults by myriads of bacilli which are suddenly liberated from the primary focus—e.g., the lung. Eventually the day comes when the kidney, with lowered vitality and with its arterioles the seat of a chronic endarteritis, no longer excretes all the bacilli and multiple tubercles develop. That they do not undergo caseation and liquefaction is due to the fact that death cuts the process short. In the surgical variety the tubercles form only after attacks by a small number of bacilli at considerable intervals, aided by a local rather than a total lowered resistance. These tubercles remain dormant for months or years and eventually undergo caseation and liquefaction, changes typical of a chronic infection. This view is strengthened by Macfarlane Walker's interesting observation that early albuminuria is a precursor of genital tuberculosis. In two of his patients albuminuria preceded the tuberculous lesions by five years and pointed to the urine as the infecting agent.

## CHRONIC OR SURGICAL RENAL TUBERCULOSIS.

Having briefly considered these two main types, I shall confine my remarks to the chronic or surgical form of renal tuberculosis. The interest that has centred on the disease is shown by its voluminous literature; in fact, Randall, an American surgeon, writing in 1919, found that no less than 1500 articles had been published in the preceding ten years, and yet the post-operative cures only average 60 per cent.! In view of the good results of the surgical treatment of tubercle in other parts of the body, provided the whole infective focus can be removed, and of the fact that renal tuberculosis is, in its early stage, limited to the substance of an organ surrounded by a good fibrous capsule, it is evident that we have yet to discover a method of diagnosing the disease in its early, or what I prefer to term, its operable stage.

It is now well known that the disease is primarily unilateral, and that the only hope of cure lies in an early nephrectomy. Spontaneous cure is extremely rare, and only a few authentic cases have been published in which the disease in the kidney appears to have been arrested, and in which the death of the patient was due to an entirely different cause. Albarran collected five cases from the literature, Rafin reported four, which, however, were not verified by post-mortem examinations, and Randall has published one case of closed tuberculosis in which death was due to pernicious anæmia, but even in this sceptics might argue that the blood changes were due to the renal lesion. More recently Bedo Hobbs, in a study of fatal cases of pulmonary tuberculosis, found fibrous nodules in the kidneys which resembled the scars of healed tubercles. Wildbolz and others have reported cases with a tuberculous kidney who have lived from 10 to 30 years in fair health. These are rare instances of autonephrectomy in which occlusion of the ureter and pelvis is followed by total caseation and necrosis, but they are so rare as to be negligible.

*Bilateral, surgical tuberculosis* is practically always secondary to a primary unilateral infection, which, if allowed to persist for a sufficient length of time, will spread to the lower urinary tract and slowly but surely reach the opposite and once healthy kidney. Continental writers (Israel, Caspar, Albarran, and Legueu) have estimated from an enormous number of cases that bilateral surgical infections should not exceed 15 per cent., but more recently Braasch has shown by animal inoculation that in seven out of 22 cases apparently unilateral the opposite side was infected, and further that after removal of the obviously diseased kidney all these patients have signs of active urinary tuberculosis. These results indicate that our conception of an apparently unilateral lesion may require reconsideration.

In the post-mortem room the figures for bilateral infection are very different, being placed by Kummel and Kapsamer at 64 per cent. and 68 per cent. respectively. Ekehorn has endeavoured to deal with this problem by exposing both kidneys and removing the more diseased one when he considered it to be the cause of pyrexia and distressing bladder symptoms. In 20 cases so treated between 1910 and 1922 the immediate result was a pronounced diminution in the pain and pyuria. Subsequently ten died,

five could not be traced, and five were still alive. Two of the survivors were free from pain and able to work 12 years after the operation, their only symptoms being nocturnal frequency; and a third was in a similar condition five years after the operation. Two of the fatal cases had lived six years and two years. Though this method of treatment is not applicable to every case, it is certainly justifiable in some, if by its means the distressing symptoms of a heavily infected bladder can be alleviated. In the Mayo Clinic the results were not so satisfactory, for out of 18 cases so treated four died immediately after the operation and ten within 18 months, either from renal insufficiency or tuberculous foci in other parts of the body.

### SEX AND AGE.

In my series of 65 cases there were twice as many females as males, but this is unusual, for the majority of figures show that the two sexes are affected equally. The commonest age is from 20 to 30. No less than 84 per cent. of my cases were between 20 and 50, figures which curiously enough are precisely similar to those quoted by Judd and Scholl in a series of 874 cases. The right kidney is affected rather more often than the left, and in my cases the percentages were 52 and 46 respectively. It is suggested that this is due to the greater mobility and lower position of the right kidney, which favours congestion and exposes it to injury, but the difference is so slight that there is no need to waste time in conjecture.

### PATHS OF INFECTION.

In the past there have been considerable differences of opinion in regard to the route by which tubercle bacilli reached the kidney, but now there are only two channels which need be considered—the blood-vessels and the lymphatics. The ureteric route, for reasons which will be given, can be disregarded. A careful study of the pathological anatomy of the disease makes it clear that a primary infection nearly always takes place through the blood-stream. It is hardly necessary to point out that the term "primary infection" is not scientifically correct, for the bacilli must have originated in some tuberculous focus, most probably a tuberculous mediastinal gland, but it signifies that the kidney has been infected from a quiescent and obscure lesion.

#### *The Hæmatogenous Route.*

It is difficult to specify the exact site of the initial lesion in the kidney, for an operation specimen is seldom obtained at an early enough stage of the disease, and when several foci are present it is almost impossible to determine their relative age. In all probability the anatomical arrangement of the intra-renal blood-vessels plays an important part. Briefly it is as follows: The branches of the renal artery pass between the pyramids and form a series of incomplete arches across their bases. These are practically end arteries, for there is no anastomosis between adjacent arches. From these arches two sets of branches arise; one set, termed interlobular, passes straight to the cortex, and the other, the arteriolæ rectæ, takes a recurrent course and supplies the base of the pyramids and the intermediate zone of the medulla. In the labyrinth each interlobular artery gives off a number of vessels which form glomeruli at the dilated extremities of the uriniferous tubules. Injected kidneys, both of man and the dog, show clearly the arterial arches giving off an enormous number of branches to the cortex, and so few to the papillæ as to make them appear almost avascular. As an interlobular artery is practically a continuation of the interlobar vessel, and is also larger than the recurrent arteriolæ rectæ, tubercle bacilli in the blood-stream are most likely to be carried along them, either to lodge in the cortex, where they give rise to a tuberculous nodule, or to enter a glomerulus and escape into a uriniferous tubule. Here they may either lodge in a convoluted tube and thus form a primary cortical lesion, or they may be swept away in the urine. An excellent argument in favour of the earliest lesions being in the cortex is given by Bedo Hobbs in his paper in *Tubercle*, to which those interested in the subject are referred. He also states that Walsh, in a careful study of 52 cases, found the cortex affected alone in 26, both cortex and pyramids in 24, and the pyramids alone in two; and that Hallé in his writings on closed parenchymatous nephritis agrees that tuberculous foci appear most frequently in the cortex, next at the junction of the cortex and medulla at the level of the vascular arches, and least frequently in the pyramid. Many clinicians consider that the primary focus is located in the base of a pyramid, as this is the site of the grossest lesions in the majority of operation specimens. This, in my opinion, does not in any way negative the theory of a primary cortical origin, for in view of the fact that the intra-renal lymph-stream flows from the cortex to the medulla, bacilli from an initial small tubercle in the cortex can be carried by the lymph to the pyramids, which, as I have already pointed out, have a very poor blood-supply. Consequently, arrest of the organisms in this anæmic area is followed by extensive necrosis and the formation of a large tuberculous focus which overshadows the small primary lesion in the cortex.

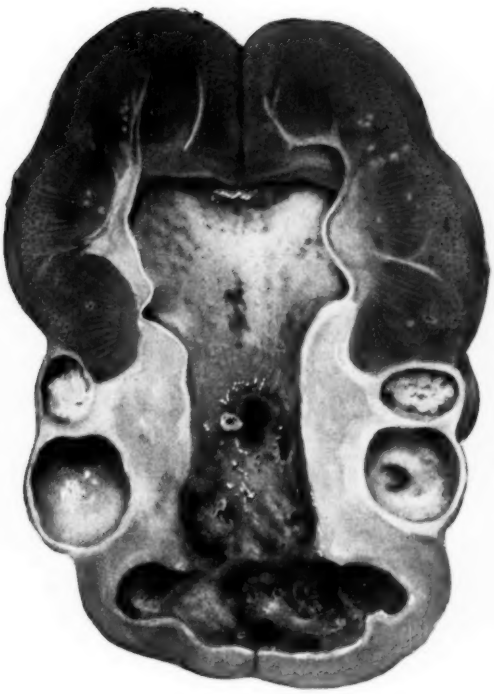
#### *The Lymphatic Route.*

In a certain proportion of cases the primary infection of the kidney takes place through the lymphatics. This is made possible by the free communication between the various lymphatic systems in relation with it. Three plexuses are described: one in the kidney substance, a second beneath the fibrous capsule, and a third in the perinephric fat. Vessels from the intra-renal plexus converge to form four or five trunks, which emerge at the hilum, where they are joined by vessels which emerge from the subcapsular and perinephric plexuses. The subcapsular plexus communicates freely with the plexus in the perinephric fat, and also with the intra-renal plexus by trunks which enter the cortex in relation with the fibrous septa of the kidney. Free communication also exists between the renal and subdiaphragmatic lymphatics above, and those of the upper ureter below. The three sets of ureteric lymphatics form a more or less continuous chain, and the lowest communicate freely with those of the bladder, prostate, uterus, and Fallopian tubes. This free communication has been proved both experimentally and clinically by many observers, amongst whom I may mention Mr. Kenneth Walker (THE LANCET, 1922, i., 684). In the discussion which followed his paper, I mentioned several cases which had come under my notice of acute prostatic abscess followed by perinephric abscess, clinical evidence which clearly demonstrates the intimate connexion between the pelvic and perirenal lymphatics. As is well-known, Brongersma is a strong advocate of this mode of infection, and considers that in many cases the bacilli reach the kidney from the lung or pleura via the lymphatics through the diaphragm. Franke holds similar views. It has also been suggested that the communication between the colic and renal lymphatics constitutes another method of infection. At present, however, there is not sufficient evidence to allow of any definite conclusions that *primary* renal tuberculosis is often caused through the lymphatics. In *secondary* infections (i.e., infection of a healthy kidney from a long-established focus on the opposite side), which are not hæmic in origin, the lymphatics play a very definite part. In these instances bacilli from the diseased kidney travel in the urine to the bladder, where they gain access to the tissues through an abrasion or ulcer, and are then carried upwards to the healthy kidney in the peri-ureteral lymphatics. Walker considered this to be the interpretation of the post-mortem findings in one of his cases which died of advanced tuberculosis of the left kidney, bladder, and prostate. The inner coat of the left ureter was the site of extensive tuberculous infiltration, but on the right side the *peri-ureteral* tissues were infiltrated and the inner coat of the ureter was healthy.

FIG. I.

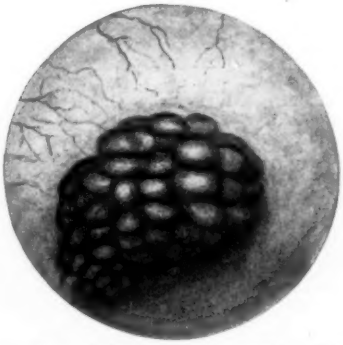
Primary closed parenchymatous tuberculous nephritis (operation specimen).

FIG. III.



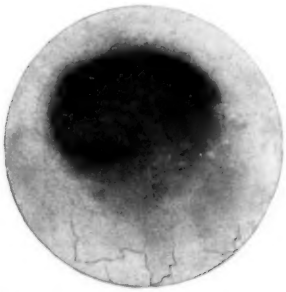
Primary open tuberculous pyelonephritis (operation specimen).

FIG. II.



Bullous œdema hiding ureteric orifice of Fig. I.

FIG. IV.



"Golf-hole" ureteric orifice of Fig. III. surmounted by tuberculous ulcer.

## MR. CYRIL A. R. NITCH: RENAL TUBERCULOSIS.

*Figs. I. and II. are after drawings by S. A. Sewell and Figs. III. and IV. after drawings by W. Thornton Shields.*

*Ureteric Route.*

As a result of experimental work by George Walker, Baureisen, Draper and Braasch, and recently by Dyke and Maybury, it has been proved conclusively that micro-organisms cannot pass directly up the ureter from the bladder to the kidney. The last-named (Dyke and Maybury) endeavoured to infect the kidneys of the rabbit by placing in the bladder a piece of Turkey sponge saturated with a thick emulsion of *Staphylococcus aureus*. The uniformly negative results led them to conclude "that the uretero-vesical junction offered, under the experimental conditions, an insuperable bar to the passage of infection from the bladder upwards." Another series of experiments "performed with a view to bring about the passage of cocci, or carmine granules, or Indian ink, from the pelvis into the renal tubules" was also fruitless and led to the conclusion that the renal papilla acted as a valve, and rendered infection of the renal tubules in the reverse direction quite impossible. When the epithelium, lining the renal sinus, was damaged there was a direct infection in the adjacent renal tissue and beneath the capsule. Therefore it is fair to conclude that direct spread of infection up the lumen of a sound ureter has not yet been proved. If its epithelium is damaged by trauma or inflammation, an ascending infection is possible, but it then takes place by direct extension in the walls of the ureter or in its lymphatics.

PATHOLOGY.

The best account is given by Hallé, who describes three types of chronic renal tuberculosis. (1) Primary closed parenchymatous tuberculous nephritis. (2) Primary open tuberculous pyelitis or pyelonephritis. (3) A combination of (1) and (2).

Alexander Randall has summarised these so clearly* that I cannot do better than quote him verbatim:—

"In the first, the primary closed parenchymatous tuberculous nephritis, the infection is situated in the parenchyma, most frequently in the cortex; it is limited and easily encapsulated; the peripherally growing lesions progressively involve the poles and lobules, forming cold abscesses, and end by a closed cavernous parenchymatous tuberculosis, with one or two ultimate conclusions—liquefaction or caseation. The lesions may be multiple, and as the condition progresses and the entire kidney becomes involved, secretion ceases. Interstitial pelvic inflammation ultimately destroys this portion of the organ, and its area is replaced by a fibro-lipomatous degeneration and scar tissue. The condition ends by 'total, successive, or simultaneous exclusion of the kidney,' or 'spontaneous nephrectomy.' Time simply adds atrophy to the process."

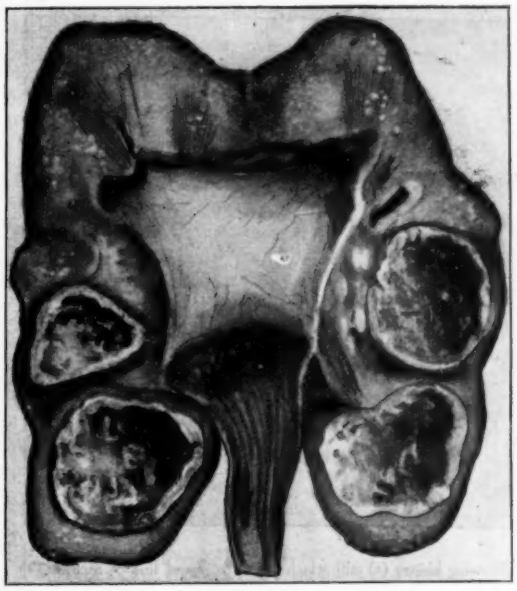
The term "closed" implies that the products of disintegration are not being emptied into the bladder. This is due to obliteration of the ureter and simultaneous or subsequent destruction of the kidney. Fig. I. on Coloured Plate illustrates these points and conforms to an *early* stage of this type. The tubercles are limited to the two poles and at the upper pole an eroded papilla is visible. The lower pole contains tubercles, caseous deposits, and abscess cavities; fibro-lipomatous degeneration is seen in the middle. The pelvis is healthy except in an upper calyx. The ureter was obliterated at the back of the bladder by a large caseous focus. The ureteric orifice, Fig. II., was hidden in a mass of bullous œdema resembling a mulberry in size and shape.

The kidney was removed from a woman, aged 37, with frequency and pyuria of four months' standing. When seen the urine contained pus and was sterile; repeated examinations for tubercle bacilli were negative. There was no efflux from the left ureter, nor was any indigo-carmine to be seen half an hour after injection. A mild cystitis accounted for the pyuria. Per vaginam a slightly thickened ureter could be felt. Three months after nephro-ureterectomy the patient was perfectly well, the ureteric orifice and the bladder were normal in appearance, and the urine was clear and free from tubercle bacilli.

In the second type, primary open tuberculous pyelonephritis, "the infection originates in the tissues of the renal pelvis high in the calyces and the papillo-calicular sinuses. It occasions a progressive ulceration, working up into the renal tissue from the lateral surfaces of the papillæ. Deeper lesions may develop, but the calicular lesions are always the more advanced, and the infection remains essentially a tuberculous pyonephrosis" (Randall). The pathologic products of the diseased kidney escape into the bladder, and in this type frequently give rise to a "golf-hole" ureteric orifice and ulceration of the adjacent mucosa. Fig. III. is a fair illustration of the type, showing advanced calicular and pelvic ulceration with destruction of the papillæ. In the cortex are two cavities which contained caseous material, and were probably the initial lesions in this case. In the upper pole several tubercles are visible, arranged in rows as if formed in a lymphatic duct. The ureteric orifice (Fig. IV.) is open, dragged out, and surmounted by a large tuberculous ulcer.

The kidney was removed in January, 1913, from a female aged 48, with a year's history of chronic cystitis and occasional hæmaturia. Six years after the operation she was in good health and weighed 12 st. She still had frequency about two-hourly day and night. Her urine contained pus, bacteria, and a trace of blood. No tubercle bacilli were found.

FIG. V.



Mixed variety. A combination of Types I. and II.

The third type is a mixed one where both of the above processes are coexistent. Fig. V. is a good specimen of the variety showing in its lower half closed parenchymatous nephritis which has progressed to caseation and almost complete destruction of the renal tissue, and in its upper half papillo-calicular ulceration and numerous tubercles, which are arranged in rows in several places.

The specimen was obtained in 1912 from a female aged 37, who had suffered from frequency and occasional hæmaturia for three years. Tubercle bacilli were found in the urine a year after the commencement of bladder symptoms. She was treated with tuberculin and improved for a time, but relapsed again when it was discontinued. The ureteric orifice was drawn out and the surrounding mucosa was congested and œdematous, and contained two tubercles. Nephrectomy with high division of ureter. The latter was thickened but its mucous membrane appeared healthy. In June of this year—i.e., 12 years after the operation—she was reported to be in good health, but I was not able to obtain further details.

* Journal of Urology, vol. ii., No. 6, p. 429.

Hallé's figures show that the mixed type is the commonest clinically, and that types I. and II. are of about equal occurrence post mortem. It will be noticed that Hallé considers that the second type is papillary in origin, but this view is open to argument, for there is no proof that the initial focus is not a small one in the cortex, and that the papillary lesion is a natural sequence of intra-renal lymphatic extension analogous to the minute but infected tonsillar crypt, which only attracts attention through the enlarged cervical gland. As I have already shown, the comparative avascularity of the papillæ encourages the development of a tuberculous focus, and as soon as its epithelial covering is destroyed contamination by the urine in the pelvis accelerates its spread.

### DIAGNOSIS.

The diagnosis depends on the symptoms of vesical irritation combined with an acid, turbid, sterile urine containing pus cells, tubercle bacilli, and occasionally blood in varying amounts. Given these data the site of the lesion is determined by cystoscopy. There are many interesting points in connexion with the diagnosis which I might refer to, but I do not propose to inflict them on you now, and will only discuss the presence or absence of tubercle bacilli in the urine. In the closed form just described tubercle bacilli cannot enter the bladder, and are therefore often absent from the urine. When present they must originate in some portion of the urinary tract below the obstructed ureter. The diagnosis of chronic renal tuberculosis can then only be made by the appearance of the ureteric orifice, the absence of efflux, and by the thickened ureter which can readily be felt bimanually, and is a positive indication of the renal lesion. In a typical case of open renal tuberculosis tubercle bacilli are found in an acid purulent urine, and there is no difficulty either in making the diagnosis or deciding on the correct treatment, but when bacilli are found in a clear urine the question arises whether tubercle bacilli can percolate through the kidney without injuring its substance. The published figures of several observers show that tubercle bacilli are excreted in a clear urine in about 9 per cent. of patients with pulmonary tuberculosis, and post-mortem examinations have shown that tuberculous foci are present in the kidneys of some and absent in others. But can a kidney excrete, for a prolonged period, a normal urine containing large numbers of tubercle bacilli originating from an obscure and undiscoverable focus without itself being damaged, and if, in such a case, the physical signs incriminate one kidney, should surgical treatment be withheld? The answer is Yes, as the following case proves:—

In 1913 I removed a gangrenous appendix from a girl of 9 years *who was otherwise healthy*. Six days later she had a sudden attack of acute pain in the left kidney followed by profuse hæmaturia. The urine, examined by Prof. L. S. Dudgeon, contained blood cells only and cultures were sterile. The kidney was tender, and there was slight pyrexia, but otherwise there were no physical signs. The hæmorrhage diminished gradually and on the fifth day Prof. Dudgeon reported that the urine was still sterile, but that it contained more leucocytes than were compatible with normal blood, and that their presence suggested an inflammatory lesion of the kidney. Fifteen days after the onset of hæmaturia a perfectly clear and apparently normal specimen of urine was found to be swarming with tubercle bacilli, which were proved by animal inoculation. The excretion of bacilli continued for two and a half months and then ceased. The patient has been perfectly well ever since, and is now a well-developed girl over 20 years old.

Now, this is either a clear case of a leaking kidney or of one containing numerous parenchymatous tubercles, which, after pouring myriads of bacilli into the glomeruli and tubules, eventually healed completely, a possibility which most authorities emphatically deny. In fact, J. R. Caulk states that "there has never been in the history of medical literature a single authentic case of spontaneous healing of a tuberculous kidney."

### TREATMENT.

The treatment of unilateral renal tuberculosis can be summed up in three words—early lumbar nephrectomy. The kidney should be removed with its capsule and any perinephric fat which is adherent to it. When dense adhesions render subcapsular enucleation necessary, the results are unsatisfactory, and the operation is apt to be followed by a persistent tuberculous sinus. If the disease is complicated by a perinephric abscess, nephrectomy must be deferred until the abscess has yielded to treatment. The kidney must never be incised to verify a diagnosis which should have been complete and certain before operation, otherwise the surrounding tissues will be infected and the wound may take months to heal. After operation a prolonged course of tuberculin should be given.

*Treatment of the Ureter.*—Most surgeons divide the ureter at a convenient distance from the kidney either with the cautery or between two ligatures after injecting iodine or carbolic acid. My own practice has been to remove the entire ureter whenever it was obviously infected, in the hopes of alleviating the bladder symptoms which persist in so many cases, but the results, though slightly better than those following nephrectomy alone, do not come up to expectations.

### TECHNIQUE AND RESULTS.

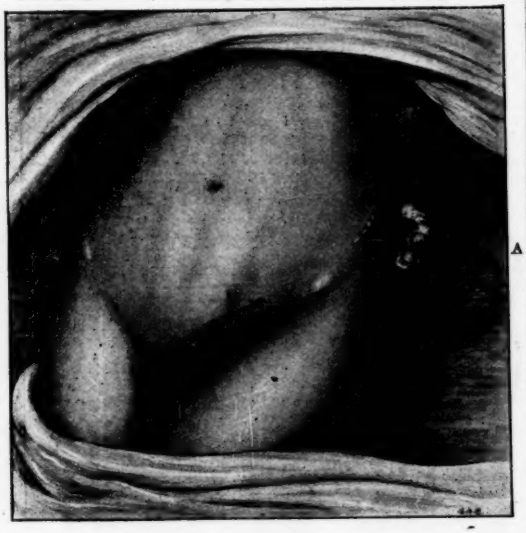
In 52 cases operated on by myself and others, which I have been able to trace up to last July, nephrectomy was performed in 33, and in the remaining 19 the entire ureter was removed as well. The results are as given in Table I.

TABLE I.—*Results of Nephrectomy and Nephro-Ureterectomy.*

| — | No. of cases. | Mortality. | | Now quite well. | With bladder symptoms. |
|---|---|---|---|---|---|
| | | Operative. | Late. | | |
| Nephrectomy | 33 | 4 | 3 | 15 (58%) | 11 (42%) |
| Nephro-ureterectomy | 19 | 0 | 3 | 10 (63%) | 6 (37%) |

Thus it will be seen that after the more extensive operation the number of apparent cures is slightly

FIG. VI.




Showing kidney (A) still attached to ureter and line of incision (B) for exposure of pelvic portion of ureter.

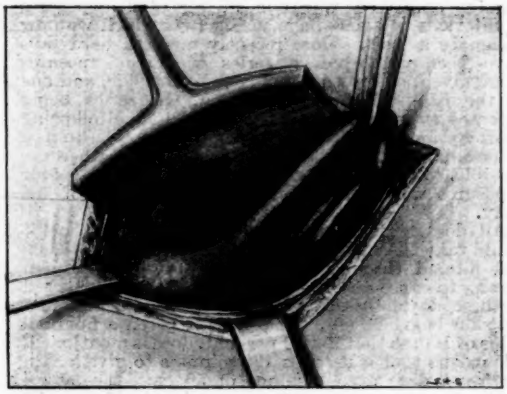
higher, and the number of cases with bladder symptoms is slightly lower. An analysis of the cases with persistent bladder symptoms is of interest. (Table II.)

TABLE II.—*Cases with Persistent Bladder Symptoms.*

| — | No. of cases. | Frequency only. | Frequency and pyuria. | Frequency and pyuria with tubercle bacilli. |
|---|---|---|---|---|
| Nephrectomy .. | 11 | 3 (27%) | 7 (63%) | 1 (9%) |
| Nephro-ureterectomy | 6 | 3 (50%) | 1 (16%) | 2 (33%) |

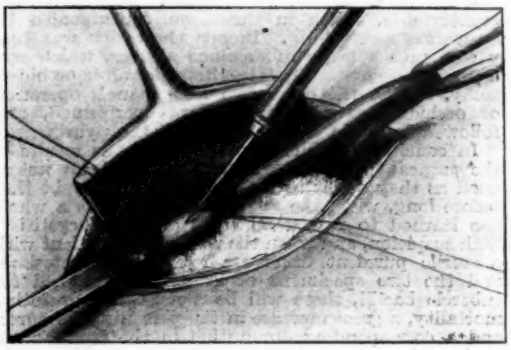
If the small number of cases from which these figures are derived is of any value, they indicate

FIG. VII.



Lower end of ureter and base of bladder. (*Drawn at an operation.*)

FIG. VIII.



Ureter ligatured at base of bladder and injected with pure carbolic acid before division.

greater benefit from the major operation. Judd states that the extensive operation necessary to remove the entire ureter greatly increases the operative risk, but this is not my experience, as in 19 cases there has not been any operative mortality. If performed by the technique I will now briefly describe the risks are slight, and the shock is no greater than after simple nephrectomy.

After freeing the kidney and ureter the pedicle is ligatured and divided and the kidney is brought out of the wound. The subperitoneal fat is then separated from the ureter as far as the finger can reach, generally to the brim of the pelvis. The wound is now sutured, leaving the kidney, still attached to the ureter, hanging from its anterior extremity. The patient is then placed supine and the pelvic ureter is exposed by Kidd's incision (Fig. VI.); it is found easily as it has already been freed as far as the brim of the pelvis, and is as easily followed to the base of the bladder (Fig. VII.), where it is ligatured in two places, injected with carbolic acid, and divided (Fig. VIII.). An assistant then gives the kidney a sharp pull, when it comes away with the entire ureter attached. The lower wound is closed without drainage and the loin wound is drained for 24 hours with a piece of corrugated rubber.

### *Operative Mortality.*

The records of 65 operated cases were examined; four died shortly after nephrectomy, one from shock, and three from uræmia, making an operative mortality of 6 per cent. In 35 of these cases which were under my own care there were no deaths from operation. If the deaths from uræmia (a cause which is rare in these days) be excluded, the operative mortality works out at 2 per cent., a figure which corresponds with other published records.

### *Late Mortality and Results.*

I will now give you a brief summary of 48 of the above cases which were traced and of which I have complete post-operative details. In every instance I have either seen the patient recently or received a letter from him or his doctor. The urine of all who were not perfectly well and free from bladder symptoms was examined by a pathologist. Forty-two were living and six had died within two and a half years of the operation, either from phthisis or tuberculosis of the remaining kidney. The present condition of the 42 survivors is as follows: 25, or 60 per cent., are in good health and may be regarded as cured, and 17, or 40 per cent., are still suffering from bladder symptoms, either frequency only, or frequency and pyuria, and in three of these tubercle bacilli are still present in the urine. (See Tables I. and II.)

TABLE III.

| | | | | |
|---|---|---|---|---|
| Out of 42 cases— | 8 | are alive | 3 | years after operation. |
| | 4 | ,, ,, | 4 | ,, ,, ,, |
| | 3 | ,, ,, | 5 | ,, ,, ,, |
| | 5 | ,, ,, | 6 | ,, ,, ,, |
| | 2 | ,, ,, | 7 | ,, ,, ,, |
| | 4 | ,, ,, | 8–10 | ,, ,, ,, |
| | 11 | ,, ,, | 10–17 | ,, ,, ,, |

Broadly speaking, the results of nephrectomy for unilateral disease in the 48 cases which were traced are as follows:—

12 per cent. are dead two and a half years after operation.
52 ,, ,, are cured.
35 ,, ,, still have urinary trouble.

It is interesting to compare these figures with those of the Mayo Clinic published by Judd and Scholl last March. In 29 years there were 863 nephrectomies for renal tuberculosis. Complete post-operative data were obtained in 611, with the following results:—

31 per cent. are dead.
58 ,, ,, are cured.
10 ,, ,, still have urinary trouble.

The figures of other writers, though varying slightly, are essentially the same, therefore it is fair to conclude that at the present day the operative mortality should not exceed 2 per cent., and the permanent cures should not be below 60 per cent.

Owing to the delay which so commonly follows the onset of symptoms, and the recognition and surgical treatment of renal tuberculosis, many patients of both sexes suffer from persistent bladder trouble (35 per cent. in my series), and males are prone to secondary genital tuberculosis. Frequency alone is due to a bladder which is contracted by long-standing

inflammation, and which will gradually dilate with time, though it seldom attains the capacity of the normal bladder. Hydrostatic dilatation is sometimes beneficial, but, generally speaking, it has little effect. One of my patients, operated on ten years ago, after a prolonged course of tuberculin advised by a physician, had such a contracted bladder that only a 2½ oz. distension was possible under deep anæsthesia. She is now able to retain urine for four or five hours, but this is exceptional. Frequency combined with pyuria is often due to a granuloma or a tuberculous ulcer of the bladder. For several years I have treated these conditions by diathermy "frizzling." The electrode is placed near enough to the ulcer to allow a shower of sparks to play on it, but care must be taken not to produce a severe burn, or perforation will follow the separation of the slough. Three males developed a troublesome stricture following tuberculous posterior urethritis. They all yielded eventually to tuberculin and careful dilatation with sounds. Four developed epididymitis, which in three was accompanied by vesiculitis and pyuria. In one the vesicle was converted into a large tuberculous abscess, which was opened and curetted extraperitoneally after orchidectomy, and in the other two Loughnane's operation of orchido-vaso-vesiculectomy was performed, and followed by rapid disappearance of the pyuria.

In conclusion, while admitting that the results of the surgical treatment of renal tuberculosis are not as good as they ought to be, yet I have no doubt that before long, when the medical profession as a whole has learned to regard all cases of mild "cystitis" with suspicion, and when the ureters of a patient with a sterile purulent urine are regularly catheterised, and the two specimens of urine are examined for tubercle bacilli, there will be a negligible operative mortality, a great increase in the percentage of cures, and a corresponding diminution in the troublesome genito-urinary complications.

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DEWSBURY MATERNITY HOME. — A maternity home of ten beds provided by the town council of Dewsbury has been opened at Moorlands Hall. The mayor, in opening the home, said that in certain parts of the town there were a great number of homes unfit for the birth of children.

ROYAL SALOP INFIRMARY.—At the annual meeting, held at Shrewsbury, it was stated that during the past year the number of in-patients was 1605 and out-patients 1216. Some 210 parishes in Shropshire and the border counties were giving generous help, the sum contributed last year being £3500—that is, £700 in advance of the previous year. During the year the subscriptions were £6650 and the donations £3270. The income balanced the ordinary expenditure. It is proposed to inaugurate a joint appeal for 1,000,000 shillings for extension and improvement of the Royal Salop Infirmary, the Eye, Ear, and Throat Hospital, the King Edward VII. Memorial Sanatorium, and the Shropshire Orthopædic Hospital. Of the £50,000 required, £6908 have been received.

# A STUDY OF THE EFFECT OF DEEP THERAPY ON THE BLOOD IN LEUKÆMIA.


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FROM the days of Pusey, who, in 1902, was the first to X ray an enlarged spleen, this method of treatment has gradually come into general use. The technique usually employed was one of repeated exposures at intervals of a few days, using rays which we now designate as soft. More recently medium hard rays have been employed, a series of three exposures being given, one to the front, one to the side, and one to the back of the splenic area, the series being repeated every three to four weeks. In the following cases extremely hard rays only were used, limited to one exposure of the whole splenic area wherever possible. In the grave cases a series of three or four exposures was given, covering various parts of the body.

All dosages mentioned are based on the time it would take the rays generated at a voltage of 210,000 and filtered through zinc 0·5 mm. and aluminium 3 mm., to cause a skin erythema at the area exposed in three days, the distance of the tube target from the skin being 23 cm. This time is given a nominal value of 100, so that if a 60 per cent. dose is mentioned, this means that if it takes 120 minutes to give a skin erythema dose at a distance of 50 cm., the actual time of exposure was 60 per cent. of this, or 72 minutes.

It will be noticed that the list of cases is a fairly representative one; this has only been made possible by the great kindness of the visiting staff of the hospital, who, often at great inconvenience owing to the lack of beds, have readmitted these patients for further observation and treatment if necessary. The blood examinations have been carried out by Mr. Carter Braine, the actual number of counts taken being about 450. His findings were most kindly checked by Prof. Stokes and others on various occasions, and the variation has never been more than 10 per cent., so that the counts as given can be considered as at least approximately accurate.

TABLE I. (CASE 1).—*Blood Counts.*

| Date. | Hb. | R.B.C. | Leucos. | Lymphos. | Polys. | Eosins. | Basos. | Monos. | Trans. |
|---|---|---|---|---|---|---|---|---|---|
| | % | | | | | | | | |
| 23/10/23 | 70 | 3,900,000 | 50,500 | 90·5 | 8·5 | 0·5 | 0·5 | — | — |
| 28/12/23 | 88 | 4,100,000 | 9,000 | 24 | 70 | 2 | 4 | — | — |
| 14/2/24 | 96 | 5,100,000 | 8,800 | 45 | 52 | 0·5 | 3·5 | — | — |
| 1/4/24 | 95 | 5,000,000 | 21,200 | 38·5 | 57·5 | 1·5 | 1·5 | — | 1 |
| 11/4/24 | 94 | — | 9,800 | 40 | 57 | 1 | — | — | 2 |
| 31/5/24 | — | 5,000,000 | 10,500 | 44 | 52 | 1 | — | 3 | — |

Hb, hæmoglobin. R.B.C., red blood corpuscles. Leucos., leucocytes. Lymphos., lymphocytes. Polys., polynuclears. Eosins., eosinophils. Basos., basophils. Monos., mononuclears. Myelos., myelocytes. Trans., transitiona's.

CASE 1.—*Lymphatic Leukæmia.*—E. P., male aged 48 years, under the care of Dr. J. Fawcett. Twelve years ago patient had an operation for perforated duodenal ulcer. One year ago he had an attack of pneumonia and has never felt well since. Three months ago he noticed that his abdomen was enlarging and since then he has been greatly troubled with indigestion. A hernial protrusion has appeared in his operation scar. Examination revealed an enlarged spleen which reached two and a half inches beyond and below the umbilicus; the notch could be felt above and slightly to left. Blood counts are given in Table I.

CASE 2.—*Lymphatic Leukæmia.*—W. M., male aged 60, under the care of Dr. Fawcett. About October, 1923, patient noticed swellings in the groins, then in the axillæ, and later in the neck. The latter was accompanied by tinnitus aurium. He complained also of increasing pain in left shoulder and the sacral region. Examination revealed an enlarged spleen which reached beyond the umbilicus and one inch below a line drawn from the umbilicus and the anterior superior iliac spine. Blood counts are given in Table II.

TABLE II. (CASE 2).—*Blood Counts.*

| Date. | Hb. | R.B.C. | Leucos. | Lymphos. | Polys. | Eosins. | Monos. | Myelos. |
|---|---|---|---|---|---|---|---|---|
| | % | | | | | | | |
| 23/11/23 .. | 59 | 3,800,000 | 180,000 | 92 | 7 | 0 | 0 | 1 |
| 7/1/24 .. | 76 | 4,100,000 | 15,200 | 74 | 22·5 | 0·5 | 3 | 0 |
| 12/2/24 .. | 96 | 5,100,000 | 8,500 | 45 | 51 | 0 | 4 | 0 |

Oxidase reaction on 21/11/23, only 10 per cent. reduction. This patient was subsequently lost sight of. Only recently has it been possible to obtain further information through the kindness of the doctor who subsequently attended him. His letter reads as follows: "In answer to your letter re M. He died in the infirmary on 21st May. I sent him there at the end of March as he was confined to bed and his home was not suitable for nursing him. At that time he had moderate enlargement of the spleen, extreme wasting, an evening temperature, pain in back, and glands were enlarged, but not very." No further details could be obtained from the infirmary as a post-mortem was not held, and the cause of death was given simply as leukæmia. In the light of experience with even apparently much graver cases, it is unfortunate that further radiation was not given, especially if death was due to a recrudescence of the disease.

CASE 3.—*Lymphatic Leukæmia.*—A. U., male aged 49, under the care of Dr. Fawcett. Three years ago patient noticed a few lumps in left side of the neck which have gradually increased in size. Two months ago he noticed his abdomen becoming larger. Three weeks ago swellings appeared in the axillæ and groins. Patient states he has felt ill for past six months. On admission he was slightly jaundiced and had œdema of the hands and feet. Abdominal examination revealed an enlarged liver which extended to five finger-breadths below the costal margin and an enlarged spleen which extended to two and a half inches to the right of umbilicus and the same distance below. The notch could be felt above and to the left of the umbilicus. There was considerable free fluid in the abdomen. Radiologist reported that the chest showed enlarged root-shadows and infiltration of both lungs. Glands: Neck, both sides, especially the left, numerous, largest size of hen's egg. Groins: Both sides, numerous, largest size of walnut. Axillæ: Both sides, numerous, largest size of hen's egg. 7/1/24: Oxidase count by Prof. Stokes—98·5 per cent. lymphatic type. 14/1/24: A large mass of glands have developed under the left ear, following attack of quinsy. The spleen has further enlarged. 20/1/24: Glands incised and pus freely evacuated. Bacteriological report: A pure growth of *Staphylococcus aureus.* 21/2/24: Temperature normal. Pulse 80–95. Blood counts are given in Table III.

TABLE III. (CASE 3).—*Blood Counts.*

| Date. | R.B.C. | Hb. | Leucos. | Lymphos. | Polys. |
|---|---|---|---|---|---|
| | | % | | | |
| 5/1/24 .. .. | 3,240,000 | 50 | 340,000 | 99·5 | 0·5 |
| 9/2/24 .. .. | 3,000,000 | 40 | 400,000 | 98·5 | 1·5 |
| 6/3/24 .. .. | 2,880,000 | 48 | 180,000 | 95 | 5 |
| 2/4/24 .. .. | 3,000,000 | 48 | 16,000 | 86 | 14 |
| 1/5/24 .. .. | 3,800,000 | 60 | 15,600 | 88 | 9 |
| 30/5/24 .. .. | 3,800,000 | 64 | 21,600 | 84 | 14 |

*General Notes.*—1. The lymphocytes remain persistently above the polynuclear, so that there is no crossing-over. 2. The red blood corpuscles and hæmoglobin after ten weeks begin steadily to rise. 3. Patient has received no further treatment for 14 weeks. He has been at home convalescing. He reported for examination on June 1st. His spleen was 7 cm. to the left of the umbilicus. His liver was smaller, reaching to one inch below the umbilical line. All glands were smaller and softer. Since this date he has been seen as an out-patient fortnightly. There has been a noticeable improvement in his general health. His blood count of leucocytes has remained practically stationary in the neighbourhood of 20,000. The liver and spleen have slowly decreased. All glands have diminished except the submaxillary, which recently enlarged. He was therefore readmitted to hospital on July 1st. His spleen now reaches 10 cm. from the umbilicus and is only about 2 cm. below the umbilical line, while the liver is now about the same distance above this line. As his leucocyte count is still only in the neighbourhood of 20,000 it is thought that a 30 per cent. deep therapy radiation to the submaxillary regions on each side will be sufficient.

CASE 4.—*Myelogenous Leukæmia.*—R. G., male, aged 53, under the care of Dr. A. F. Hurst. In July, 1923, patient consulted his doctor for shortness of breath. Examination revealed the spleen to be much enlarged. It has steadily increased in size up to time of admission, 21/2/24. Examination revealed an enlarged spleen, which was 2 inches to the right and 4 inches below the umbilicus. The liver is also definitely enlarged. Blood counts are shown in Table IV.

TABLE IV. (CASE 4).—*Blood Counts.*

| Date. | Hb. | R.B.C. | Leucos. | Myelos. | Polys. | Lymphos. | Eosins. | Basos. | Monos. |
|---|---|---|---|---|---|---|---|---|---|
| | % | | | | | | | | |
| 27/2/24 | 55 | 3,460,000 | 184,000 | 59 | 34 | 2 | 1 | 0 | 4 |
| 14/3/24 | 70 | 3,540,000 | 23,600 | 6 | 78 | 11 | 1 | 4 | 0 |
| 28/3/24 | 80 | 4,100,000 | 11,000 | 1·5 | 84 | 11 | 1·5 | 2 | 0 |
| 9/5/24 | 100 | 5,200,000 | 16,000 | 10 | 75 | 12 | 0 | 2 | 1 |
| 30/5/24 | 98 | 4,800,000 | 26,000 | 25 | 60 | 10 | 1 | 1 | 3 |

CASE 5.—*Myelogenous Leukæmia.*—K. S., female, aged 34, under the care of Dr. Fawcett. History of amenorrhœa from September, 1922, with steady increase in size of abdomen. On admission a large hard tumuor could be felt extending from pubis to half-way between umbilicus and sternum. Pelvic examination revealed presence of tumour mass there also. Splenectomy, 12/3/23. Blood counts are given in Table V. and VA.

TABLE V. (CASE 5).—*Blood Counts, 1923.*

| Date. | R.B.C. | Leucos. | Melos. | Polys. | Lymphos. | Mast. |
|---|---|---|---|---|---|---|
| 12/3/23 | 3,300,000 | 110,000 | 50 | 41 | 7·5 | 1·5 |
| 14/3/23 | 3,200,000 | 200,000 | — | — | — | — |
| 21/3/23 | 2,200,000 | 146,000 | — | — | — | — |
| 7/4/23 | 3,100,000 | 74,000 | — | — | — | — |
| 6/6/23 | 2,900,000 | 47,000 | — | — | — | — |
| 4/9/23 | 2,400,000 | 121,000 | — | — | — | — |

TABLE VA.—*Blood Counts, 1924.*

| Date. | Hb. | R.B.C. | Leucos. | Myelos. | Polys. | Lymphos. | Eosins. | Basos. |
|---|---|---|---|---|---|---|---|---|
| | % | | | | | | | |
| 12/3/24 .. | 75 | 3,900,000 | 220,000 | 50·5 | 30·5 | 5·5 | 4 | 7·5 |
| 8/4/24 .. | 90 | 5,000,000 | 9,400 | 42 | 45 | 6 | 1·5 | 5·5 |
| 9/5/24 .. | 100 | 4,800,000 | 10,600 | 3 | 77 | 12 | 2 | 6 |
| 28/5,24 .. | 100 | 5,000,000 | 11,000 | 2 | 75 | 17 | 3 | 2 |

The effect of splenectomy was first a temporary rise of leucocytes followed by a decline, which apparently reached its maximum in about three months. From this time there was a gradual rise to more than double the original count. The effect on the red blood corpuscles was unfavourable, and even six months after the operation the count was only 2,400,000. Her symptoms on readmission were complaints of general weakness and of being easily irritated and excited.

CASE 6.—*Polynuclear Type Leukæmia.*—F. B., female aged 60, under the care of Dr. Hurst. 13/3/24. History of six months' illness, with breathlessness and palpitation. Later she noticed swellings in axillæ and neck. She has gradually become weaker, and seven days before admission was compelled to go to bed. Latterly she has had a very troublesome cough. X ray report: Irregular rounded shadow opposite root of right lung. The right diaphragm has limitation of movement. Respiratory system: Diffuse bronchitis. Abdomen: Spleen four finger-breadths below costal margin. Glands: A mass of glands along posterior border of sterno-mastoids, numerous glands in axillæ, some as large as walnuts and a few in the groins. Blood counts are given in Table VI.

TABLE VI. (CASE 6).—*Blood Counts.*

| Date. | R.B.C. | Hb. | Leucos. | Polys. | Myelos. | Lymphos. | Monos. |
|---|---|---|---|---|---|---|---|
| | | % | | | | | |
| 12/3/24 .. | 3,950,000 | 70 | 144,000 | 84 | 9 | 5 | 1 |
| 20/3/24 .. | 3,580,000 | — | 130,000 | 73 | 18 | 8 | 0 |
| 2/4/24 .. | 3,800,000 | 85 | 90,000 | 80 | 11 | 6 | 2 |
| 12/4/24 .. | 4,200,000 | — | 40,000 | 78 | 11 | 10 | 1 |
| 20/4/24 .. | — | — | 38,000 | 83 | 5·5 | 8 | 3·5 |

This case showed previous to deep therapy marked hourly variations between 80,000 and 144,000.

This patient subsequently had her teeth extracted for pyorrhœa, commencing April 24th. Gradual extraction was carried out at intervals of a few days. On May 24th she developed an acute inflammation of the skin in the right cervical region about level of larynx, which rapidly sloughed. She was readmitted to medical wards May 31st, transferred to surgical June 5th, and died June 17th. The infection was streptococcal, and the erysipeloid condition spread over the right chest and shoulder, with sloughing of the skin. The left arm became swollen and inflamed, and eventually several suppurating sinuses formed.

*Post-Mortem Report.*—Emaciation, extensive erosion of the skin over right shoulder and neck anteriorly, suppuration of left arm from several sinuses, great œdema of the arms. Muco-pus in bronchi. Dense adhesions right lung. This lung full of semi-hard nodules. A dense mass around left root. Lung adherent to pericardium. Spleen enlarged, weight 350 g.

The question naturally arose as to whether the condition was of the nature of an X ray burn. As, however, she only received three exposures in all, a 50 per cent. skin erythema dose to the lower left chest from in front, and a 45 per cent. dose to the same chest from behind and a 35 per cent. dose to the lower abdomen, this could be absolutely ruled out. The cervical regions and the right chest received no rays whatever. An X ray burn is invariably limited to the area of exposure.

CASE 7.—*Myelogenous Leukæmia.*—C. J., male aged 39, under the care of Dr. H. French. Patient was well until 18 months ago, when he was treated for carbuncles and has never felt right since. Latterly his general weakness has become much more pronounced, and his abdomen has steadily increased in size. His condition on admission was serious. The abdomen was enormously swollen. The spleen reached to the left anterior superior iliac spine and practically filled the pelvic cavity. The liver also was greatly enlarged, being only separated from the upper border of the spleen by about one inch. He has had a severe incessant cough for past two months, and on examination œdema of the bases of both lungs was present. Œdema of feet and legs was present, and considerable free fluid in the abdomen. His former admission to hospital was July 4th, 1923, and after a short stay he was sent to the X ray department for treatment as an out-patient. He was given in all 54 exposures to the splenic area, between this date and March 14th, 1924. There was considerable benefit at first, but from the beginning of the year he became increasingly worse, until on readmission his condition was as above described. Blood counts are shown in Table VII.

TABLE VII. (CASE 7).—*Blood Counts.*

| Date. | Hb. | R.B.C. | Leucos. | Myelos. | Polys. | Lymphos. | Eosins. | Basos. | Hyaline. |
|---|---|---|---|---|---|---|---|---|---|
| | % | | | | | | | | |
| 5/7/23 | 36 | 4,560,000 | 325,000 | 86 | 19 | 3 | 2 | 3 | 7 |
| 26/7/23 | 30 | — | 250,000 | 66 | 28 | 6 | — | — | — |
| 29/7/23 | 40 | 3,660,000 | 430,000 | — | — | — | — | — | — |
| 8/4/24 | 38 | 2,260,000 | 580,000 | 70 | 21 | 5 | 1 | 3 | — |
| 2/6/24 | 56 | 4,000,000 | 146,000 | 59 | 30 | 5 | — | 6 | — |

A blood count previous to deep therapy showed that in the same day there was a remarkable variation of between 440,000 and 600,000.

CASE 8.—*Myelogenous Leukæmia.*—W. W. M., male aged 43, under the care of Dr. Hurst. History of duodenal ulcer since 1919. First admitted to hospital 2/4/23, discharged 18/5/23. He was greatly improved for about nine months, then an acute attack of abdominal pain. Readmitted on surgical side, but as the spleen was found to be enlarged, he was treated medically. Present condition: Spleen somewhat enlarged, about three inches below the costal margin. The liver greatly enlarged, reaches to umbilical line. Marked bronzing of the skin. Axillary glands enlarged. Extreme general weakness. Patient since admission has been failing rapidly, his red blood corpuscles have dropped from 6,000,000 to 2,000,000, his hæmoglobin from 40 per cent. to 28 per cent. His leucocyte count exhibits extreme variations between 400,000 and 240,000. He has no desire for food, and is extremely listless. The fæces contain altered blood. Table VIII. gives the blood counts.

TABLE VIII. (CASE 8).—*Blood Counts. Before and After.*

| Date. | R.B.C. | Hb. | Leucos. | Polys. | Myelos. | Trans. |
|---|---|---|---|---|---|---|
| | | % | | | | |
| 26/4/24 .. | 6,000,000 | 40 | — | 40 | — | — |
| 20/5/24 .. | 3,400,000 | 35 | 250,000 | — | — | — |
| 3/7/24 .. | 2,050,000 | 28 | 346,000 | 40 | 49 | 4 |
| 10/7/24 .. | 2,146,000 | 32 | 200,000 | 49 | 36 | 6 |
| 24/7/24 .. | 3,500,000 | 44 | 120,000 | 57 | 27 | 4 |
| 12/8/24 .. | 4,000,000 | 60 | 100,000 | 53 | 25 | 3 |

The serious condition of the patient was so obvious that it seemed best to give only small radiations repeated at intervals of one week or longer. By this means it was hoped to cause a rather slow destruction of the leucocytes, with at the same time a decidedly stimulating effect on the red blood corpuscles and the hæmoglobin.

*Deductions from the Cases.*

These cases would appear to justify the following deductions:—

1. From the commencement of the exposure to deep therapy radiations the leucocytes begin to fall, and the destruction is most marked during the last half of the radiation.

2. The subsequent fall may be interrupted by a fleeting primary reaction coming on two to five hours afterwards, and by a secondary reaction which comes on two to five days afterwards and usually lasts 24 hours.

3. The susceptibility of the individual leucocytes varies with the type of leukæmia. In the lymphatic the lymphocyte is the most susceptible, in the myelogenous the myelocyte, and in the polynuclear the polynuclear. However, no matter which type it is, the polynuclear, the lymphocyte, and the myelocyte, if present, all share in the fall, and also in the primary and secondary reactions.

4. With the fall of the leucocytes there is a rise of the red blood corpuscles and the hæmoglobin. Conversely, when the red blood corpuscles and hæmoglobin fall the leucocytes rise.

5. The spleen steadily diminishes in size without undue rapidity and without any apparent deleterious effect. Likewise the liver, when enlarged, and also the lymph glands, similarly diminish in size.

6. The health of the patient steadily improves and in uncomplicated cases, without any serious disturbance of compensation, they are soon back to full-time work.

7. Splenectomy is not a contra-indication, as the effect is almost as striking as if this organ were present.

8. Patients already subjected to a long course of ordinary X rays, with final failure to respond, are still susceptible to deep therapy with considerable hope of improvement.

With subsequent radiations, in the lymphatic type, if the lymphocytes still predominate, they are the most susceptible, whilst the polys are but slightly affected. However, if the crossing over has taken place and the polys are now in the ascendent, they become the more susceptible, whilst the lymphos remain more or less stationary. They may even rise as the result of the radiation. The same remarks apply to the other types of leukæmia. The secondary reaction is still present. The reduction in the size of the spleen is more marked than with the first radiation. The rise of the red blood corpuscles and hæmoglobin may be more marked. There is usually a more noticeable improvement in the patient's general condition.

To attempt an explanation of these various deductions brings one at once into the realms of controversy. Heinecke, in 1913, demonstrated the effect on the spleen itself. One hour after radiation the destroyed leucocyte nuclei were practically all massed in the centre of the follicles and only a few in the periphery of the follicles. The destruction was at its maximum four to six hours later. Phagocytes now appeared which engulfed the nuclei and they in turn disappeared in eight to ten hours. After 12 to 24 hours no nuclei or phagocytes were visible. The follicles became cell-poor and free of lymphocytes. With stronger doses the follicles themselves are destroyed, and only the fixed cells left. The diminished spleen becomes of a dark-brown colour. There is an extraordinary increase of pigment, which normally is scanty. The round cells are destroyed and replaced by vacuolated epithelioid cells.

Direct cell injury is the outstanding feature. The nucleus and the protoplasm are especially sensitive. Wassermann demonstrated that it is the reproductive element of the nucleus which is especially vulnerable, as opposed to the nutritive element. The former he designated as the geniceptor and the latter the nutriceptor. Nurnberger demonstrated in his researches on the uterus of white mice that the nucleus shows a change in staining, it loses its acid character and stains with basic dyes, that it loses its normal chromatin hue and breaks up into larger and smaller chromatin globules. Halberstadter, in experiments on apes with trypanosomes, found that if sufficient dose was given to injure but not to destroy the trypanosomes, they no longer had the power of reproduction, and so gradually died off without doing any injury. By giving larger doses Wassermann proved that not only the geniceptors, but also the nutriceptors, were destroyed, and the whole organism died.

The sensibility of a cell depends upon the rapidity of its reproduction; the quicker this takes place the more vulnerable it is. The younger the cell the more vulnerable it is. The less specialised its function the more susceptible it is. The leucocyte is extremely susceptible, a 20 per cent. unit skin dose being quite sufficient to destroy its nucleus and the whole cell.

The primary reaction is possibly due to the irritative effects of the destroyed leucocytes causing the various storehouses throughout the body to throw their reserves of leucocytes into the blood-stream. The secondary reaction, however, may be due to the same irritative effects of the destroyed leucocytes on the cell-producing centres themselves, causing increased and rapid proliferation of more or less immature leucocytes, which, in turn, are especially vulnerable to the toxic agents circulating in the blood. The subsequent decline is probably an inhibitory action on the cell-producing centres by the toxins limiting their activity. The chief effect would be on the geniceptor element of the nuclei of the reproducing cells.

The leucocytes that survive the bombardment of the rays are the fittest and the strongest, as the weaker, the younger, and the more immature, are the first to be destroyed, and one feels inclined to believe that after the secondary reaction and subsequent decline, and the tissues have returned to a more or less normal condition, the leucocytes now formed have acquired a definite new characteristic; they are more resistant to the rays and might be designated as gamma leucocytes. It is probable that the extraordinary feeling of well-being that so frequently follows deep therapy radiations is due to the presence of these gamma leucocytes in the blood as well as the accompanying rise of the hæmoglobin and the red blood corpuscles which may likewise have acquired the gamma quality. Many remarkable results of the rays could be explained on some such supposition, and it is possible that one of the widest fields of usefulness of these rays will be in the application of stimulating doses to the red blood corpuscles, with slightly destructive doses to the leucocytes, repeated at intervals of four to six weeks, and so to keep up what one might call a positive gamma stage over long periods. At the present time this is being more or less empirically done by many workers on the Continent in tuberculous and other chronic lesions.

For accurate results all blood counts must be most carefully carried out. As far as possible the same observer, using the same pipettes, the same counting-chamber, the same technique, the same conditions of time of day and relationship to food. In active cases this is absolutely necessary, as the hourly variations of the leucocyte count may be in the hundreds of thousands.

The results obtained would indicate that the success of the earlier methods was due to the cumulative effects of the few hard rays which were emitted during each application. The danger of repeated applications of soft rays has been irritation, both to the skin and the deeper structures with inflammatory changes and adhesions. In addition a great drawback has been that it made the patient a semi-invalid. He became an out-patient attending two or three times a week for treatment over prolonged periods of many months or years. By the use of deep therapy the danger of dermatitis is reduced to practically nil, as one never gives more than a 60 per cent. radiation. The rays are so penetrating that one can use any part of the body to obtain the effect desired. After the patient's primary stay in hospital he can usually return to his work, and he need not again leave it for weeks or months, and even when it is necessary for his readmittance, his stay need not be more than five to seven days.

*Indications for Further Treatment.*

These are: (1) Any marked increase in the pathological leucocytes, especially when accompanied by a drop in the hæmoglobin and the red blood corpuscles. (2) The presence of enlarged glands in other parts of the body which show no signs of diminishing. These should be radiated separately. (3) Failure of the spleen to diminish considerably in size, or its subsequent enlargement after having diminished. (4) The general health of the patient deteriorating.

It is to be noted that the actual number of leucocytes present in the blood is not given as one of the indications. It would be quite easy to set an arbitrary figure of, say, 20,000, above which would be an indication for further radiation. If accompanied by any of the indications as given above, it would be quite correct to subject the patient to further radiation, but otherwise one feels it would only be doing harm.

The contra-indications for further therapy are: (1) Leucopenia. This would indicate that an excessive dose had been given. (2) Persistent diarrhœa, due also to an excessive dose. (3) An actual increase of the pathological types of leucocytes after the radiation, unless only a small trial exposure had been given, in which case it would still be safe to give a full 60 per cent. skin dose. (4) Deterioration in the patient's general health with failure of the hæmoglobin and red blood corpuscles to rise.

*Dangerous Fields of Exposure.*

The liver should, generally speaking, not be exposed to the rays as there is much more liability to Rontgen toxæmia, a systemic condition with headache, fever, nausea, vomiting, diarrhœa, &c. If, however, it is excessive in size and does not reduce with the spleen, small doses (30 per cent.) to limited areas may be tried. The rays, especially the central rays, should not be directed towards the suprarenals, as they, like the testes and ovaries, are extremely susceptible to the rays.

*Prognosis.*

With the return to a practically normal condition the stage of compensation may be said to be reached. This stage may last for months, but the patient should be instructed to report once a month to his doctor or to the hospital, as far as possible at the

same hour of the day. A blood count should be taken and his general condition thoroughly gone into. If the indications point to a recrudescence of the disease, then arrangements should be made for an immediate radiation. The opportunity could be taken of radiating enlarged glands if present, or the long bones, so as to save the splenic area for any serious relapse where an immediate and marked effect is desired.

The duration of the stage of compensation is of necessity impossible to state. We know that it can last for three months or longer. This will mean that in the ordinary type of cases without a severe grade of failure, with marked enlargement of the liver, jaundice, œdema of the lungs, ascites, &c., it can reasonably be hoped that the maximum hospital treatment will not be more than one month in a year. The remaining 11 months the patient should be able to follow his usual occupation. The long interval between the radiations should help to lessen the risk of a marked diminution in effect of the subsequent radiations and so permit a greater expectancy of life with fairly good health.

In any particular case there are two indications of great importance in the prognosis. One is the rapid return to the normal relation and percentages of the various types of leucocytes, with a concurrent disappearance of the pathological types from the blood. The other is when, after subsequent radiations, we no longer get any disproportionate fall of the leucocytes, but all are equally affected. This, of course, means that there is no longer an overproduction of any one type, and with the overproduction the presence of many weak and immature and defective cells in the blood. The failure to obtain these two conditions with one or more radiations is indicative that the prognosis is bad.

The question as to whether a combination of splenectomy and deep therapy would be the best method of procedure is difficult to answer. In the one case of splenectomy under observation the effect was only a temporary one. The unfavourable sign was the marked and persistent diminution of the hæmoglobin and the red blood corpuscles. Notwithstanding the absence of the spleen this case responded to deep therapy extremely well, and the disappearance of the myelocytes from the blood with the return to a practically normal blood count was accompanied by a marked rise of the hæmoglobin and the red blood corpuscles, so that the patient is now at her work apparently in the best of health.

A series of observations were made as to the effect of the radiation on the blood pressure, pulse, and respiratory-rate. In four of the cases there was no appreciable change, either at half-way through or the end of one hour after the radiation. In two of the cases the blood pressure fell about 10 per cent. by the end of the radiation; this was accompanied by a slight slowing of the pulse-rate, but no change in the respiratory. In Case 6, which was of a very irregular type in every way, the readings were as shown in Table IX.

TABLE IX.—*Blood Pressure Readings.*

| — | Pulse. | Resp. | Systolic B.P. | Diastolic B.P. |
|---|---|---|---|---|
| First radiation— | | | | |
| Before .. .. | 78 | 22 | 110 | 74 |
| After .. .. | 76 | 22 | 108 | 72 |
| Second radiation (interval 4 days)— | | | | |
| Before .. .. | 78 | 22 | 98 | 62 |
| Half-way .. | 84 | 23 | 93 | 62 |
| End .. .. | 84 | 22 | 105 | 72 |
| 1 hour later .. | 84 | 22 | 103 | 70 |
| 2 hours later .. | 82 | 20 | 95 | 64 |

The average age was 51 years. The average blood pressure was systolic 106, diastolic 76. The youngest patient of the series, aged 34, upon whom splenectomy had been performed, had the highest blood pressure—113–82 mm. Hg.

# MELIOIDOSIS,

## A DISEASE OF RODENTS COMMUNICABLE TO MAN.

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Two new items, tularæmia and melioidosis, have recently been added to our long account against the rodents. The damage done by these two diseases is infinitesimal when compared with the ravages of plague and, so far as our present knowledge takes us, they are of very limited distribution. This is particularly true of melioidosis which, apart from one case in Singapore, has been recognised nowhere except in the towns of Rangoon and Kuala Lumpur. It is difficult to believe that it is confined within such narrow bounds, and we are writing this short account in the hope that it will enable workers in other fields to recognise the disease when they meet it.

Melioidosis is very like glanders and, as in glanders, its symptoms vary according to the part or the organ of the body which is attacked; there are, indeed, absolutely no symptoms on which a trustworthy diagnosis can be based, and the true nature of the disease can be determined only by the cultivation of the causative organism from the lesions, or from the blood, sputum, or urine.

It was first recognised as a new disease by Whitmore and Krishnaswamy (1912). A year later, Whitmore (1913) published an excellent account of the malady under the title of "A Glanders-like Disease Occurring in Rangoon." Knapp (1915) and Krishnaswamy (1917) have made further contributions to our knowledge of this subject. We described new forms of the disease, and proposed for it the name "Melioidosis." as the physicians of ancient Greece had described by the name "Melis" a variety of conditions resembling glanders. We called the causative organism *Bacterium whitmori*, in order that Colonel Whitmore's name might continue to be associated with the bacillus which he was the first to isolate and describe; the name *pseudomallei*, which was the one he himself gave to the organism, being invalid (Stanton and Fletcher, 1921).

Our first encounter with the disease was in the form of a severe distemper among laboratory animals at Kuala Lumpur which broke out towards the end of 1913. The initial symptom was a milky discharge from the eyes and nose which was speedily followed by pulmonary involvement and death. Every case ended fatally. We isolated the causative organism but, though we noticed some points of resemblance to glanders, we did not suspect its connexion with Whitmore's bacillus or with a disease of man. In the year 1917, one of us (A. T. S.) saw several cases of the infection both in man and in animals, and found that they were due to one and the same bacillus. It is an organism with very marked specific characters, and was identified not only with the bacillus which had been the cause of the epizoötic three years before, but also with that isolated by Whitmore from the human cases in Rangoon.

### *Epidemiology and Epizoology.*

The causative organism has been found in the blood, the urine, the sputum, and, in one case, in the intestinal contents of man and animals. The outbreak among our laboratory rodents was due to the consumption of infected foodstuffs, which had probably been contaminated by the excreta of wild rats suffering from melioidosis. We have examined several wild rats (*Mus griseiventer* Bonhote) which had died from the disease contracted under natural conditions; and a domestic cat, which was supposed to have died from distemper, was found to have

succumbed to melioidosis. The disease may be conveyed to a rabbit or guinea-pig by pricking it with a needle dipped in a virulent culture, and it is possible that, occasionally, parasites may act as vectors of the infection; but we have not been able to prove that this is so. The disease which follows subcutaneous inoculation of the virus runs a course quite different from that which we saw in the laboratory outbreak, all the characteristic symptoms of which we readily reproduced experimentally by mixing cultures of *B. whitmori* with the animals' food, or by introducing the micro-organism into their noses with a platinum loop.

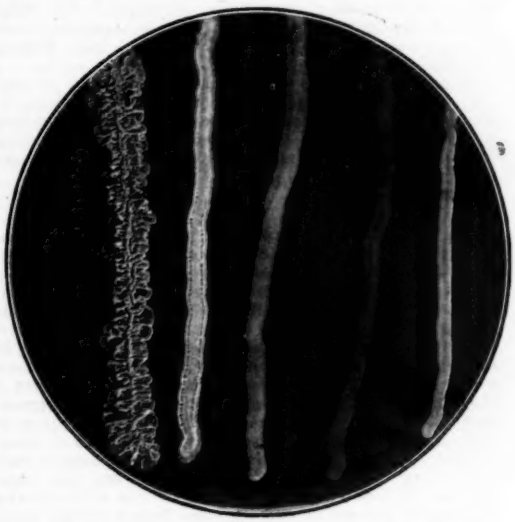
The problem of the way in which man contracts melioidosis remains unsolved. A large proportion of the cases observed by Whitmore, Knapp, and Krishnaswamy were morphine-injectors; at one time they considered that infection was carried by the syringe and they called the disease "morphine-injectors' septicæmia"; but none of the cases which have occurred in Kuala Lumpur have been injectors of drugs. We have not met with a case in which there was any history or evidence of a primary local lesion, such as occurs in animals inoculated with the virus. As it has been proved experimentally that animals can be infected by feeding, and as the onset of the disease in several human cases has been marked by very severe gastro-intestinal symptoms, we consider it in the highest degree probable that in man infection takes place through the medium of food which has been contaminated by rats.

The bacillus has been found in the blood, the sputum, the urine, and the discharge from the superficial lesions of human cases, and the lungs are almost invariably affected; one would therefore expect the virus to pass readily from the sick to the healthy, but this has not happened. We have not met with a single example in man where it has been possible to trace the infection to a previous case of the disease. Patients suffering from melioidosis have not been segregated; they have been treated in the general wards of hospitals, yet they have not communicated the disease to others. Only a small number of cases has been recognised up to the present time; 38 by Whitmore in Rangoon during 1911–12, 1 in Singapore in 1922, and 11 in Kuala Lumpur between 1917 and 1924 (4 in 1917, 1 in 1920, 3 in 1921, 2 in 1923, 1 in 1924). Of these 50 patients, 25 were Indians, 23 were Burmans, 1 was a Chinese, and 1 a European; with one exception all were males. Some additional cases have been seen by Knapp (1915) and by Krishnaswamy (1917) in Rangoon, since the publication of Whitmore's account of the disease in 1913. It is highly improbable that melioidosis is limited to the three towns where its presence has been detected; but its diagnosis is almost impossible in places where there is no laboratory, and even where laboratory facilities are available the disease may escape recognition by those who are unfamiliar with it.

Though the recognised morbidity-rate from melioidosis is very low, the case-mortality is very high. So far, only two men are known to have recovered from the disease. In one of these the recovery was only partial, for there remained suppurating sinuses leading to necrotic foci in the tibiæ and tarsal bones when the patient was last heard of, two years after the commencement of his illness.

### *Ætiology.*

*Bacterium whitmori*, the causative organism of melioidosis, possesses marked characteristics which distinguish it clearly from other pathogenic bacteria. Whitmore has described it in detail and in this short account we shall follow him closely. The bacilli, as seen in films made from the lesions of an infected organ, are about the size and shape of *B. mallei*. They stain readily with all the usual stains, but they are neither acid-fast nor Gram-positive. With Leishman's stain they show a well-marked bipolar staining, a character which is exceedingly useful in arousing early suspicion of the nature of the infection, when a preliminary examination of films from diseased organs is being made. Growth upon all the usual culture media is rapid and luxuriant; it occurs under both aerobic and anaerobic conditions, though much more luxuriantly under the former. On the surface of liquid media a pellicle is formed which becomes a tough wrinkled skin in the course of four or five days. The two outstanding features of *B. whitmori* are, first, its motility in young cultures and, second, its curious growth on glycerine agar. Cultures on agar containing 5 per cent. of glycerine begin to acquire a wrinkled appearance in a couple of days; the growth rapidly extends until after a week's incubation it has become heaped up and rugose like a thick growth of tubercle bacilli (see figure). The organism liquefies gelatin and



Corrugated and mucoid cultures of *B. whitmori* on glycerine-agar with *B. mallei* for comparison. Seventy-two hours growth at 37° C. From left to right: *B. mallei*, strain A; *B. whitmori*, corrugated; *B. whitmori*, corrugated; *B. whitmori*, mucoid; *B. mallei*, strain, Muktesar; *B. mallei*, strain, Java.

curdles milk. It grows readily on potato, but without displaying any phenomena of diagnostic importance. *B. whitmori* produces no gas in carbohydrate media. Glucose broth, inoculated with the bacillus, becomes pink in a couple of days, if Andrade's indicator is used. The colour begins to fade at the surface of the medium almost before the deeper parts have begun to redden, and by the end of ten days it has gone. Some strains in addition to fermenting glucose form acid in saccharose, dulcite, and mannite, when they are first isolated, but they soon lose this property.

In addition to the usual form of the bacillus, which produces a corrugated growth on glycerine agar, we have isolated on several occasions a slimy mucoid variety, like the mucoid variety of *B. paratyphosus* (Fletcher, 1921). The mucoid has never been found except in association with the ordinary corrugated form; in one human case colonies of both types were isolated from an abscess in the patient's leg. On another occasion corrugated colonies were cultivated from the spleen of a rabbit, but mucoids were grown from its testes. We have shown, by agglutination and absorption tests, that the corrugated and the mucoid *B. whitmori* are serologically identical with one another. Moreover, if a mucoid colony be inoculated into broth, incubated for a few days, and then plated out, a number of corrugated colonies will be found mixed with the mucoids from which they have taken origin. We have not seen the reverse process occur in vitro—i.e., mucoids originating from corrugated colonies—although we have

adopted the method employed with success by Ainley Walker (1923) in the case of *B. paratyphosus*.

An investigation of 14 strains of *B. whitmori*, from human and from animal sources, by means of agglutination, absorption, and fixation tests, showed not only that we were dealing with a homogeneous group, but also that this group was closely related to some strains of *B. mallei* which we had obtained from India and Java. Its kinship with three strains of *B. mallei* from the national collection of type cultures proved to be very distant. These latter cultures were isolated probably from horses of the Arab strain, and we venture the hypothesis that the glanders bacillus which infects Arab horses differs serologically from that which attacks the country-bred ponies of the Far East. Horses are apparently immune to infection with melioidosis; we have attempted to infect both Arabs and country-breds by subcutaneous, intravenous, and intranasal inoculation, but without success.

Inoculated into the peritoneal cavity of a male guinea-pig *B. whitmori* gives Strauss's reaction, the classical test for *B. mallei*, provided that the culture is not so virulent, nor the dose so large, as to cause the death of the animal before the characteristic inflammatory enlargement of the testes occurs.

### *Animal Inoculations.*

Rodents are readily infected by feeding, by inhalation, by subcutaneous inoculation, and by scarification of the skin. The subcutaneous inoculation of a freshly isolated and virulent culture of *B. whitmori* will cause the death of a guinea-pig, rabbit, or rat from septicæmia in less than 24 hours. If the quantity of the virus is smaller, or its virulence is less, or if it be inoculated by scarification, the result is a localised caseating induration which breaks down to form a sloughing ulcer. The lymphatic glands in the groins and scapular regions become enlarged and suppurate, and the animal dies, usually within about three weeks. If a guinea-pig be infected by feeding it on a culture or by painting *B. whitmori* on the nasal mucosa, it dies within two weeks or less with caseous ulcerating lesions of the mucous lining of the nose, enlarged tracheal glands, caseous deposits in the lungs, and sometimes in the spleen and other organs. We have fed three monkeys (*Macacus cynomolgus*) on culture of *B. whitmori*, with the result that one died with caseous patches in the lungs, but the other two escaped infection. Goats are susceptible; domestic fowls are not.

### *Morbid Anatomy.*

The characteristic lesion of melioidosis is a small, yellow, caseous nodule which commences as a collection of polynuclear cells surrounded by a zone of congestion. By the time these nodules have become large enough to be visible to the naked eye, they consist of a mass of necrotic, caseous material containing a great number of chromatin fragments which are the remains of dead nuclei. The nodules have been found in almost every part of the body except the brain, and they coalesce to form large areas of caseation, particularly in the lungs. They sometimes break down to form abscesses in the viscera of man, but not in animals. Small abscesses are the commonest lesion in the spleen; in the liver larger abscesses are more frequent. The gall-bladder is sometimes thickened, and *B. whitmori* can be cultivated from the bile. On several occasions small superficial ulcers have been found in the cæcum, but *B. whitmori* has not been grown from them.

The lungs are nearly always affected. When the disease is not far advanced, the nodules can be felt, like shot, within the substance of the lungs; they resemble miliary tubercles, except that they are less numerous and more scattered. When the process has gone further the lungs may be filled with large caseous masses; nodules in the lungs very rarely break down to form abscesses. The spleen is enlarged and frequently contains nodules and small abscesses filled with creamy pus. Nodules in the liver are particularly prone to suppurate, producing multiple small, round, sharply demarcated abscesses filled with thick greenish-white pus. Abscesses may also be found in the subcutaneous tissue, in the muscles, and in connexion with the bones. It is not uncommon to find nodules on the peritoneum of animals, especially on the under-surface of the diaphragm and in the great omentum, but we have not seen these lesions in human cases.

Melioidosis in rats is characterised by massive caseation of the lungs; the contents of the thorax are converted into a caseous mass with the heart embedded in the middle of it. Smaller lesions may be found in the liver, kidneys, and testes. Sometimes there are large nodules in the substance of the spleen and on its surface; it then bears a striking resemblance to the spleen of a rat with resolving plague. A condition exactly similar to that seen in naturally infected rats may be produced by feeding them on cultures of *B. whitmori*, or by inoculating a small quantity of a laboratory culture at the root of the tail. If a very virulent culture is used, the animal may die from septicæmia in about 24 hours. Sometimes the resemblance to plague is very striking; a rat which had been fed on a culture, recently isolated from a human case of melioidosis, died five days later, and, post mortem, there was the intense subcutaneous injection and redness, associated with hæmorrhagic enlargement of the cervical and axillary glands, which is seen in rats dead from plague. The condition of the lungs, however, was characteristic of melioidosis; they were largely converted into yellow caseous material which was so friable that they crumbled like a milk cheese when one attempted to grasp them with a pair of forceps. Great numbers of *B. whitmori* were found in films prepared from the lungs. The bacilli were almost entirely within large cells. No organisms were found in films made from the blood or the spleen, although *B. whitmori* was cultivated from them.

### *Symptomatology.*

Melioidosis presents no cardinal symptoms upon which to base a diagnosis, consequently it is difficult to give a succinct account by which it may be recognised. The symptoms depend partly upon the virulence of the infecting strain and its initial dose, and partly upon the resistance of the patient and upon the region of his body in which the lesions are situated. There is no clinical resemblance between tuberculous meningitis and tuberculous disease of the hip-joint, yet both are due to infection with the same organism. Similarly, there are wide differences between one case of melioidosis and another; we have seen, on the one hand, acute septicæmic cases which resembled cholera, plague, or typhoid fever, and, on the other, localised infections with *B. whitmori* which were diagnosed as amœbic abscess of the liver, lobar pneumonia, or mastoiditis, according to the organ or part of the body in which the main lesions were situated and which bore the brunt of the disease.

When the infection is very virulent, the illness begins suddenly with vomiting, collapse, and diarrhœa so severe that a tentative diagnosis of cholera has been made on more than one occasion. The four cases which occurred in Kuala Lumpur during 1917 all began in this way and all were fatal. In these very acute cases a reaction usually occurs, on the third day the temperature rises and assumes a swinging septic character; in one instance a patient actually died during the stage of collapse, 72 hours after the beginning of his illness. When the initial infection is less virulent, there is no preliminary collapse but fever is high from the commencement, and the patient passes quickly into a typhoid condition. If he survive the initial septicæmia, the organisms establish themselves in various parts of the body, where they multiply and form caseous or pyæmic foci. There are nearly always some signs of pulmonary involvement, and the lungs are found to be diseased in 90 per cent. of the cases examined after death. In one patient there were nodules in the substance of the

kidneys and ulceration of the mucous membrane of the bladder. In this case the outstanding symptoms were those of severe acute cystitis. Three of the patients seen in Kuala Lumpur suffered from skin lesions; in one a generalised pustular rash broke out the ninth day; in another, a pustule, from which *B. whitmori* was cultivated, appeared on the chest a week after the beginning of illness; in the third case there were numerous purulent subcutaneous abscesses and hæmorrhagic bullæ. Late in the course of the disease, should the patient reach this stage, abscesses may develop in connexion with the bones. These abscesses show little tendency to heal when opened and they form sinuses leading down to soft necrosed bone.

To sum up, some of the most acute cases resemble cholera or plague; others, which have a high temperature from the beginning, resemble malaria, enteric fever, or general tuberculosis; yet others find their way to the dysentery wards. If pustules and abscesses appear, a diagnosis of acute glanders may be made; while the bone lesions which appear later on resemble tertiary syphilis or chronic tuberculosis. Delirium is a common symptom, and we have seen one unfortunate patient who was confined in a cell because he was supposed to be afflicted with acute mania.

*Prognosis.*

With two exceptions, every person known to be infected with melioidosis has died; of these two exceptions, one recovered after a long illness, the other was still an invalid with abscesses, sinuses, and chronic suppuration in the bones of his feet and legs more than two years after the commencement of the malady.

*Diagnosis.*

As we have stated already there are no definite clinical signs by which the disease can be recognised; a certain diagnosis can be made only by cultivation of the causative organism. A "positive" agglutination reaction is of value as presumptive evidence, particularly if the titre of the serum increases after an interval, but this reaction is obviously of little value in the diagnosis of the disease in its more common acute form.

The nature of the disease has been recognised during the life of the patient in only five of the 50 cases of which we have the details. In one of these five cases *B. whitmori* was cultivated from the blood, in another from the urine, in another from a pustular eruption, in another from an abscess in the parotid, and in the fifth the suspicions aroused by a "positive" agglutination test were confirmed by the cultivation of the bacillus from an abscess which appeared later.

*B. whitmori* has been cultivated from the blood and urine of human cases and also from pustules and abscesses when these have been present. In one case of infection in a rabbit it was cultivated from the intestinal contents. The inoculation of media with blood obtained by splenic puncture is useful in clearing up a doubtful diagnosis. When the lungs are involved, as they usually are, the examination of the sputum or of material obtained by puncture of the lung may make the diagnosis clear. In cases of obscure fever, associated with enlargement of the liver, this organ should be explored with a needle and glycerine-agar slopes and animals should be inoculated with material thus obtained. Whenever an abscess of the liver is aspirated or drained, glycerine-agar and guinea-pigs should be inoculated with the pus. Some cases of abscess of the liver due to *B. whitmori* have been mistaken for amœbic lesions.

Melioidosis is a rare disease in Kuala Lumpur; we have been keenly on the watch for it, not only in the post-mortem room but also among the rats examined in connexion with routine plague work. In Rangoon, where it has been known to exist for 14 years, it has not become common. But all the great epidemic diseases must have had small beginnings, and it is well that we should be on our guard against such a painful and fatal malady as melioidosis.

(*Continued at foot of next column.*)

# TUBERCULIN TREATMENT IN EXPERIMENTAL TUBERCULOSIS.

BY L. S. P. DAVIDSON, M.B., CH.B., M.R.C.P. EDIN.

(*From the Department of Bacteriology, University of Edinburgh.*)

IN view of the claims made by certain clinicians in favour of tuberculin therapy, the absence of experimental proof in support of this form of treatment is specially significant. The apparent discrepancy between the clinical and laboratory findings may be explained by a study of experimental tuberculosis in laboratory animals.

The failure of tuberculin as a specific and certain cure is now universally admitted. In fact, it is open to question whether tuberculin therapy possesses any real value, and whether the favourable results claimed from its use are not derived from general sanatorium régime. The majority of tuberculosis specialists, however, state that tuberculin treatment is of undoubted value, but even its most ardent supporters advance its claims with certain important reservations. Clinical experience is essential if satisfactory results are to be obtained. The physician must take into consideration (1) the site and extent of the lesion; (2) the type of the disease, whether acute or chronic, stationary or spreading, febrile or afebrile; (3) the general health of the patient. Having assessed all the available evidence, he may then be able to judge the correct dosage. After each dose the local, focal, and general reactions must be considered before estimating the next. No two cases can be treated alike, and success is essentially a function of experience; for no benefit will accrue if the case is unscientifically handled, but actual harm, or even death, may result from an excessive focal reaction with aggravation of the lesion and consequent serious systemic effects.

*Difficulties Attending Experimental Investigations of Tuberculin Therapy.*

The difficulties of the laboratory worker who attempts the tuberculin treatment of experimentally infected animals (e.g., guinea-pigs) can thus be understood. The appropriate initial dose, the subsequent ones, and the intervals between them can only be estimated empirically. Little or no information is known regarding the reactions of the animals to the antigen. Moreover, for any immediate conclusions to be drawn from the experimental results, a considerable number of animals must be used in order to eliminate the fallacies due to wide individual variations. Thus, in any scheme of experiments in which batches of animals are treated with the same doses at fixed intervals, the consideration of each individual case on its own merits is lacking.

In addition there are further difficulties. While it is well recognised that the guinea-pig is extremely susceptible to tuberculosis, only those who have actually carried out experimental work on the subject can realise to what extent individual guinea-pigs may vary. Thus in the publication of the Royal Commission on Tuberculosis it is stated that in one batch of animals injected with the same dose at the same time, the survival periods varied from 39–244 days. In the experiments about to be described it varied from 21–180 days. In other words, a definite minimum

(*Continued from previous column.*)

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lethal dose acting within a reasonable time cannot be established. Another fallacious statement which is constantly being made is that if a guinea-pig has tuberculosis it progressively loses weight. This only occurs either when the animal is extremely susceptible or when the dose is excessive. In the event of the animal having a moderate resistance, or when the dose of tubercle bacilli is small, it may steadily gain in weight. Eventually, however, when the tubercle bacilli have overcome the resistance of the animal and the infection has become widespread, there is progressive loss in weight, followed by death. Erroneous conclusions, therefore, may be drawn if these facts are not realised.

A further important consideration in evaluating experimental results is the following. It must not be taken for granted that, because a discharging ulcer dries up, or a lymphatic gland, previously soft, becomes hard and shotty to the touch, or fibrosis is seen on microscopic examination in an organ removed at a post-mortem, that these observations indicate general healing, much less cure. Prof. E. H. Kettle[1] clearly showed in his paper on the criteria of cure in experimentally infected animals that in untreated guinea-pigs one gland might be fibrosed while the next was caseous; that even in one organ, such as the spleen, one part might exhibit signs of healing, while in another area there was active spread; that on careful microscopic examination patches of active disease might be found in areas of fibrosis. In short, it is typical of tuberculosis that the disease heals in one area while it spreads in another.

In consequence of these pathological findings in untreated guinea-pigs, fibrosis indicates only that a certain amount of cure has taken place in the area examined. It does not contra-indicate the evidence of active tuberculosis elsewhere. In my experience of the disease in guinea-pigs such active lesions will invariably be found. The only proof of cure is the survival of treated animals with death of the controls. These considerations indicate the difficulties and fallacies in any attempt to estimate the value of tuberculin treatment in experimentally infected animals.

The observations to be described form part of a more extensive investigation into the effect of physical and chemical processes on the antigenic values of bacterial vaccines.

### *Objects of the Investigation.*

Guinea-pigs were injected with living tubercle bacilli, and then treated by various vaccines of the tubercle bacillus in order to ascertain (1) whether benefit or cure resulted, and, if so, which type of vaccine was the most efficient; or (2) if actual harm resulted.

### *Vaccine Used.*

It was originally intended that three types of vaccine should be tested: (1) the ordinary heat-killed saline bacillary emulsion; (2) a detoxicated vaccine; (3) a defatted or diaplyte vaccine (Dreyer). As no undiluted diaplyte antigen could be obtained from the Oxford laboratory, the work on this vaccine was held over. Since then, however, Kettle has investigated this question, using undiluted diaplyte antigen, and has kindly allowed me to quote his results.

*Ordinary Vaccine* (Bacillary Emulsion).—This was prepared by growing a recently isolated strain of the human type on Dorset's egg medium. The surface growth was removed, weighed, and evenly emulsified in saline so that each cubic centimetre contained 1 mg. of heat-killed tubercle bacilli. By means of dilutions the requisite doses were made. This vaccine will be referred to as the "bacillary emulsion."

*Detoxicated Vaccine.*—A subculture of the same strain used for the "bacillary emulsion" was detoxicated by Dr. David Thomson, the originator of the detoxicating process. He prepared a vaccine containing the alkali soluble products of the organism, each cubic centimetre representing 100,000 million bacilli. I am indebted to Dr. Thomson for making this and other detoxicated vaccines, and for his continued interest in these investigations.

*Experimental Animals.*—Forty-five guinea-pigs obtained from the same source were weighed and divided into three groups (A, B, and C) of 15 in each. On Dec. 15th the animals in group A received 1/100 mg. of living tubercle bacilli subcutaneously in the groin. Likewise group B received 1/500 mg., and group C 1/1000 mg. Owing to the severe cold about Christmas time, several animals in each group died. This was in no way connected with the injections, as numerous stock animals also died at the same time. Only those animals surviving for a minimum of three weeks are included in these results. On Jan. 18th two guinea-pigs died, showing definite evidence of tuberculosis. Treatment was then started—i.e., one month after the injection of living bacilli. Eight guinea-pigs were left untreated as controls. Nine were treated with detoxicated vaccine, and eight with the bacillary emulsion. The animals were weighed and injected with progressively increasing doses at weekly intervals.

### *Results.*

In every case tuberculous disease was present either when an animal died after progressively losing weight or was killed after continually gaining weight. The guinea-pigs which died in a comparatively short time showed very advanced disease in every organ, while the animals killed at the end of the investigation only showed early lesions. The investigation was concluded on March 25th—i.e., about 100 days after the injection of living tubercle bacilli. With the exception of three animals which were kept to ascertain the length of their survival, all remaining guinea-pigs were killed and their organs subjected to microscopic examination. These animals, despite the fact that palpable inguinal glands were present, appeared to be in good health and had increased in weight.

*Examination of the Weight Charts.*—Examination of the weight curves of the 17 treated guinea-pigs shows that no benefits have accrued and no immunity has been produced. In fact, the reverse is the case, as the eight control animals show the largest proportional gain in weight. Table I. clearly indicates the results.

TABLE I.

| — | Average weight in grammes. | | Average gain or loss. | Percentage gain or loss. |
|---|---|---|---|---|
| | Before treatment. | After treatment. | | |
| Controls— | | | | |
| 8 guinea-pigs .. | 357 | 487 | +130 | +36 |
| Detox. vaccine— | | | | |
| 9 guinea-pigs .. | 438 | 461 | + 23 | + 5 |
| Bacillary emulsion | | | | |
| 8 guinea-pigs .. | 423 | 465 | + 42 | +10 |

On examination of the table of weights of control animals compared to animals treated with diaplyte antigen, published by Kettle, corresponding results are seen. (Table II.)

TABLE II.—*Prof. E. H. Kettle: Table of Weights.*

| — | Average weight in grammes. | | Average gain or loss. | Percentage gain or loss. |
|---|---|---|---|---|
| | Before treatment. | After treatment. | | |
| Diaplyte— | | | | |
| 10 guinea-pigs .. | 445 | 394 | −51 | −11 |
| Controls— | | | | |
| 10 guinea-pigs .. | 394 | 424 | +30 | + 8 |

Thus, in Kettle's series the controls are 19 per cent. better than the animals treated with diaplyte antigen. In my series the controls are 31 per cent. better than the animals treated with detoxicated vaccine and 26 per cent. better than the animals immunised with the bacillary emulsion.

[1] The Criteria of Cure in Tuberculosis of the Guinea-pig, THE LANCET, 1924, i., 68.

*Microscopic Examination.*—No microscopic examination was necessary in any of the animals that actually died from the disease, as the disease, seen by the naked eye, was in a very advanced state. Careful microscopic examination was made of the organs of all the animals that were killed on March 25th. It will be remembered that, although all these animals had palpable inguinal glands, their general health was apparently good. The lesions found in every animal, treated or control, were identical. The livers were the least affected, the lung next, while the lymphatic glands at and adjacent to the site of infection and the spleen were the most involved. Fibrosis was absent, and the pathological changes were of the proliferative cellular type. It may be safely said that the microscopic evidence points to the lesions being of recent origin, the infection having been localised to the seat of injection for a considerable period. Shortly before the animals were killed the infection had become systemic, and probably during the next four to eight weeks a steady loss of weight followed by death would have occurred.

A comparison of sections of organs of treated and untreated animals showed identical lesions.

### *Conclusions.*

As judged by body-weight, the period of survival, and microscopic findings, tuberculin treatment of the experimentally infected guinea-pigs in this investigation was not only ineffective in controlling the infection, but was actually harmful.

## ABNORMAL EXTERNAL JUGULAR VEIN.

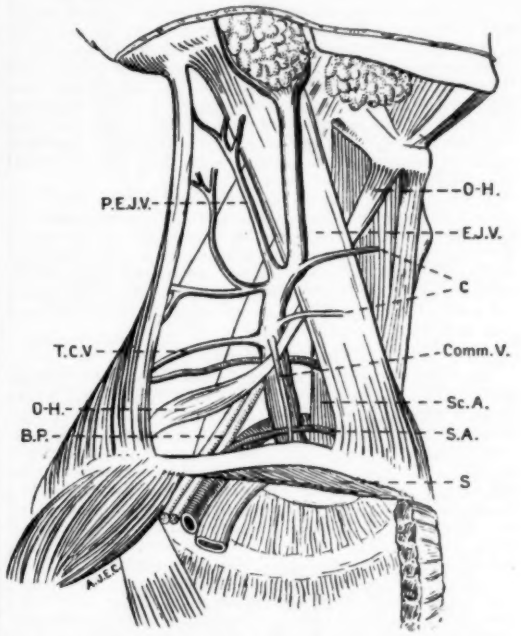
BY A. J. E. CAVE, M.B. MANCH.,
DEMONSTRATOR IN ANATOMY, UNIVERSITY OF LEEDS.

THE abnormality forming the subject of the present communication was observed recently in an adult male body during the course of its dissection in the anatomy department of Leeds University. It is deemed worthy of record partly because of its possible surgical significance, and partly because it does not appear to have been recorded previously.

### *Normal External Jugular Vein.*

Normally the external jugular vein is formed by the confluence of the posterior auricular and posterior facial veins upon the superficial aspect of the sterno-mastoid muscle, at a point behind and below the angle of the mandible. The site of union is usually below the inferior limit of the parotid, but often the gland overlaps the origin of the great vessel, or the latter may commence actually in the parotid substance. From its origin the external jugular proceeds downwards and backwards upon the sterno-mastoid to the antero-inferior portion of the subclavian triangle, its surface marking being a line drawn from a point midway between the mastoid process and angle of mandible to about the middle of the clavicle. In its course it is covered by skin, superficial fascia, platysma, and, according to Poirier,[3] the transverse branches of the cervical plexus (which, however, may pass deep to the vein); in the subclavian triangle it is deep to the suprascapular artery. Its posterior relations are the sterno-mastoid, the N. cutaneus colli, then (having left the sterno-mastoid about the junction of the middle and lower thirds of that muscle) the A. transversalis colli, the intermediate portion of omo-hyoid, the lower roots of brachial plexus, and the third part of the subclavian artery. To reach the subclavian vein the external jugular is obliged to perforate, first the superficial, and then the deep layer of the cervical fascia in the subclavian triangle, usually behind the clavicle; and as this deep fascia is intimately attached to the whole circumference of the vessel wall, the lumen of the vein is maintained at a maximum. According to Struthers[5] the valves of the external jugular are defective, and this fact, in conjunction with the inability of the vessel to collapse at its site of transit through the deep fascia, enhances the likelihood of air-embolism following wounds of the vein.

The more constant tributaries of the external jugular are (1) the posterior external jugular (entering at posterior border of sterno-mastoid); (2) the




Abnormal relations of external jugular vein. B.P. = Brachial plexus; O-H. = omo-hyoid; T.C.V. = transverse cervical vein; P.E.J.V. = posterior external jugular vein; Comm.V. = communication between E.J.V. and subclavian vein; S. = subclavius muscle; S.A. = suprascapular artery; Sc.A. = scalenus anticus; C. = communications from anterior jugular vein; E.J.V. = external jugular vein.

tranverse cervical vein (above posterior belly of omo-hyoid); (3) communications from the common facial and anterior jugular veins (crossing the sterno-mastoid); (4) the anterior jugular itself (passing deep to sterno-mastoid); and (5) sometimes the suprascapular vein.

### *Recognised Abnormalities of External Jugular Vein.*

It may be absent on one side, or on both, according to Cunningham,[1] Quain,[2] Piersol,[4] and Morris.[6] It may vary considerably in its mode of origin, being sometimes the continuation merely of the posterior facial vein, or the posterior auricular; in such cases it is small, the internal and anterior jugulars being enlarged. It may receive the lingual vein (Morris) and the cephalic vein (Quain, Morris), this being the persistence of an early developmental phase; and when the other jugulars are subnormal in size, the present vessel is proportionately enlarged. According to Morris[6] it may pass over the clavicle to open into the cephalic, and both Quain[2] and Morris[6] draw attention to its occasional jugulocephalic branch. Morris figures this branch on p. 648. The vessel may be double according to Gray[3] and Piersol; Sobotta[8] and Sappey[7] make no comment upon such variation. One author[4] states that the vein is sometimes pierced by the N. cutaneus colli.

*Present Abnormality.*

As shown in the drawing, this external jugular vein was normal at its origin and in its sterno-mastoid course. On leaving the superficial surface of that muscle it came to lie upon the roots of the brachial plexus, and the A. transversalis colli; but instead of crossing the omo-hyoid also it pierced the deep fascia just above the muscle, and passed *deep* to the intermediate portion thereof, sending off, however, a small vein which descended over the omo-hyoid to enter the subclavian. Thus the intermediate part of the omo-hyoid was enclosed in a venous loop, through which ran also the suprascapular artery, anterior (as normally) to the external jugular itself. As a result of this anomalous disposition the great vein was "tacked down" fairly deeply in the neck, and was also more tortuous in its lower part than the diagram suggests. The anomaly was bilateral; the anterior jugulars were very small; both internal jugulars were present and of normal size, but the external itself was fully thrice its average size.

I have no evidence as to whether, in life, the external jugulars were subjected to compression by the omo-hyoid; this would probably be obviated by the venous communications with the anterior jugulars and by the extra communicating vein present. Possibly, in development, the omo-hyoid split the lower part of the external jugular system; but that is a minor point.

*Clinical Significance.*

Note in connexion with this anomaly (*a*) its large size, (*b*) its passage deep to the omo-hyoid, and (*c*) its transit through the deep cervical fascia above the level of that muscle, the vein possessing, in consequence, an abnormally deep course in the subclavian triangle. Given a vessel so disposed, the surgeon working in the posterior triangle, upon the plane of the omo-hyoid, might, thinking himself in no danger of wounding the external jugular, proceed to a deeper plane. His next manœuvre might then bring him unexpected and profuse hæmorrhage, and the grimmer catastrophe of air-embolism. Moreover, the superficial communicating vein lying over the omo-hyoid might easily be mistaken for a normally placed, though small, external jugular, and so still further mislead the operator. Apparently this variation is uncommon, but to guard against danger in case of its occurrence the surgeon might be advised to incise half an inch above the clavicle just anterior to the anterior border of the trapezius, then to dissect down and secure the posterior belly of the omo-hyoid, and by blunt dissection to follow this up to the intermediate portion, reflecting medially all tissues superficial to the muscle. In this manner the normally disposed external jugular would be retracted out of harm's way, and an abnormal, deeply-lying vessel would be exposed in time to avoid injury to it.

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INTERNATIONAL CONGRESS FOR INDUSTRIAL ACCIDENTS AND PROFESSIONAL DISEASES.—At a meeting in Amsterdam on Dec. 21st last, the Permanent Committee of the International Congress for Industrial Accidents and Professional Diseases (*Ongevallengeneeskunde en Beroepsziekten*), which has not been in session since 1912, was reconstructed, Sir Thomas Oliver (England) and Dr. Kaufmann (Switzerland) being elected as hon. presidents. The fourth congress is to be held in Amsterdam on Sept. 7th, 1925. An English committee, under the presidency of Sir Thomas Oliver, is now being formed and the names of the members will be published later. Dr. H. S. N. Menko is hon. secretary of the English Committee, and his address is 2, Grosvenor-gardens, Cricklewood, London, N.W. 2.

## TWO CASES OF ALARMING HÆMORRHAGE DUE TO STREPTOCOCCUS INFECTION.

BY MACLEOD YEARSLEY, F.R.C.S. ENG.,

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THE following two cases, in which alarming hæmorrhage occurred as the result of the presence of a hæmolytic micro-organism, are both interesting and instructive:—

CASE 1.—Mr. A., aged 20, the subject of marked nasal obstruction (due to an accident some 18 months previously) and septic tonsils causing frequent sore throats, during which he was incapacitated for work, was operated upon in December, 1920. A submucous resection was performed, followed by dissection of the tonsils. Nasal plugs of compressed gauze were inserted in accordance with my usual method. A troublesome general oozing from the tonsils followed, which was treated at first in the usual manner. No special bleeding spot could be found, and it was noted that the hæmorrhage appeared to occur at about 20-minute intervals, each attack being heralded by the detachment of very friable clot, which broke up easily. Thirty grains of calcium lactate were given, with saline injections four-hourly. The bleeding became less, but at 10 P.M. recurred with renewed severity. The tonsils had been very septic, and I was loth to carry out a suggestion of suturing the faucial pillars. The patient was, therefore, seen in consultation by Dr. H. G. Butterfield, who remarked upon the strong streptococcus odour of the case. Twenty cubic centimetres of antistreptococcic serum were at once injected, and by 11.30 P.M. the bleeding had practically ceased. The next morning the patient was much better, but there was still a little oozing, and a second dose of 20 c.cm. of serum was given at 10 A.M. by Dr. Butterfield. At 12.30 P.M. there was only slightly blood-stained mucus, and by 5.30 P.M. all bleeding had ceased. The nasal plugs were removed at 10.30 A.M., without the occurrence of any hæmorrhage.

CASE 2.—Mr. B., aged 22, had suffered from colds, morning nausea and sickness, and repeated sore throats for some time. The tonsils were septic, and he showed the complexion and acneform eruption of chronic toxæmia. The tonsils were dissected out in February, 1923, the left containing much foul-smelling, cheesy material. The patient did well until five days later, when there was a slight attack of hæmorrhage which yielded to treatment. This recurred next day at 5.30 P.M. more severely, and was treated by the injection of 1 c.cm. of hæmoplastin. The fauces were much swollen, with hæmorrhagic patches, and I noticed a strong streptococcic odour which had not been manifest before. The clot showed the same friable nature as in the previous case. Hæmorrhage recurred next day, and he was seen in consultation by Dr. Butterfield, who gave 25 c.cm. of antistreptococcic serum at 4 P.M. The effect was remarkable. By 6 P.M. the bleeding had entirely ceased, the swelling of the fauces had greatly diminished, and the unpleasant smell was much less noticeable. Further progress was uneventful. A swab, taken at the consultation, swarmed with streptococci.

*Commentary.*

Both these cases show much the same features. In both hæmorrhage was due to a hæmolytic organism, rendering the clot soft and liable to crumble at the slightest touch. In both the unpleasant, bad-meat odour, characteristic of streptococcus infection, was present. In the first case no swab was taken, so that the diagnosis was not confirmed bacteriologically, although there can be little doubt clinically as to the similarity of infection in the two patients. The effect of an antistreptococcic serum was quickly marked in both cases, especially in the second, and the rapidity with which the smell disappeared in this case was remarked by everybody, including the patient's relatives.

The futility of any other treatment in such cases is obvious. It was proposed to me in the first case to suture the faucial pillars. Had I done so, the removal of the stitches 24 hours later would have certainly been attended by renewed bleeding, and the effect of such an operation upon the septic tissues can easily be imagined.

# A CASE OF EXTREME MALFORMATION OF THE UTERUS

ASSOCIATED WITH PERIODIC PAIN.

BY FRANK COOK, B.Sc., M.B., B.S. LOND., F.R.C.S. ENG.,
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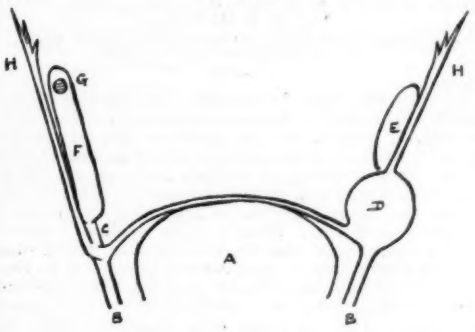
THE following case of uterine malformation seems to be worthy of record:—

A girl of healthy appearance, aged 17, was referred to me by Dr. John Hollings on account of primary amenorrhœa and intense periodic pain in the left lower abdomen, accompanied by vomiting. This pain recurred at regular intervals of 28 days, and lasted for three or four days on each occasion; it had started at the age of 13, and tended to increase in severity. Although the development of the breasts, vulva, and secondary sexual characters in general appeared to be perfectly normal, the vaginal canal and uterus were found on recto-abdominal examination under anæsthesia to be extremely ill-developed or entirely absent. The right ovary was distinctly palpable, the left seemed to be considerably enlarged.

Various forms of medical treatment were applied without avail. The girl was seriously incapacitated during the monthly attacks, and her doctor found considerable doses of morphia necessary to alleviate the pain. On account of this latter fact, and in view of the definite localisation of pain and apparent ovarian enlargement, it was decided to operate. Laparotomy revealed the following state of affairs.

The left ovary was normal in size and general appearance. The right ovary was considerably elongated, and about twice the size of that on the left; at its upper pole was a recently ruptured Graafian follicle. (In this latter connexion it should be noted that operation was performed on August 6th, the last painful period having terminated on July 26th.) The abdominal ostia of both Fallopian tubes were normal in appearance, and patent. On the right side the tube was patent as far as a point near the internal abdominal ring, where it was closely attached to the round ligament; it thence turned as a narrow solid band to cross the posterior surface of the bladder and reach its fellow of the opposite side. Although the Mullerian ducts had thus met in the middle line, there was nothing whatever to indicate their further fusion or descent to the urogenital sinus. On the left side, and corresponding to the junction of the Mullerian duct and round ligament, there was situated a spherical tumour rather less than a golf ball in size. This was judged to represent a rudimentary uterus or adenomyoma, and it was consequently excised as the probable source of pain (Fig. 1). On section the excised tumour was found to consist of tough muscular tissue, of which the fibres appeared to be concentrically arranged. It was solid, apart from a minute circumscribed space at its centre. Examined microscopically by Dr. R. D. Passey, the bulk of the specimen proved to consist of plain muscle tissue, approximately disposed in three strata, of which the middle was the thickest and consisted of fibres arranged in various directions; the inner and outer layers contained fibres of mainly circular arrangement. The central cavity was lined by mucous membrane indistinguishable from uterine mucosa. In general, the examination indicated definitely that the tumour represented a rudimentary uterus developing abnormally in the course of the left Mullerian duct, and not an adenomyoma. Prof. A. Stokes kindly prepared the accompanying micro-photographs, which demonstrate in detail the structure in the neighbourhood of the central cavity. (Figs. 2 and 3.)

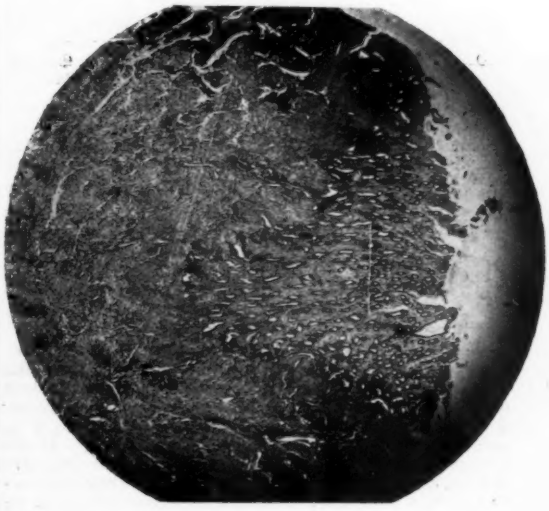
FIG. 1.




A, Bladder; BB, round ligaments; C, ovarian ligament; D, tumour representing rudimentary uterus; E, left ovary; F, right ovary; G, recently ruptured Graafian follicle; HH, Fallopian tubes.

FIG. 2.

FIG. 3.



The patient has been entirely free from her periods of pain since the operation, although several months have elapsed. Unfortunately, in this particular case the causation of the pain has seemed so obvious as to throw but little light on the nature of dysmenorrhœa in general.

# A NOTE ON THE ALLEGED DETERIORATION OF INSULIN IN THE TROPICS.

BY A. NEAVE KINGSBURY, M.B., B.S., D.P.H., D.T.M. & H. LOND.,
PATHOLOGIST, INSTITUTE FOR MEDICAL RESEARCH, KUALA LUMPUR, FEDERATED MALAY STATES.

DURING the past 12 months the deterioration of insulin in tropical climates has aroused considerable interest, if judged by the number of contributions on the subject which have appeared in the medical press. The majority of writers have expressed the opinion that there is a definite decrease in potency after insulin has been exposed to a tropical temperature for even a short time. Many of these workers, however, have based their conclusions on the blood-sugar findings from three or four rabbits only, and in their reports have laid insufficient stress on the probable error resulting from the small number of animals employed. The evidence now available that the reaction of rabbits to insulin in the tropics differs from that obtained in temperate climates also tends to discredit many results obtained in India and elsewhere.

But the careful work of Major Stott[1] on 12 diabetics in India is open to neither of these objections. He showed that a progressive fall in the potency of a large batch of insulin occurred month by month when kept at room temperature. On first arrival in India this insulin was found to have a glucose equivalent of 12 g. per original unit, and the activity gradually decreased to a glucose equivalent of less than 1 g. per original unit after six months storage. If his monthly glucose equivalent values of the insulin are plotted against time, the resulting curve approximates to a logarithmic one. Further reference will later be made to this point.

On the other hand, Bose[2] has reported favourably on the keeping properties of insulin in India, and in January last a letter was addressed to the medical press by manufacturers of insulin[3] stating that a batch had been kept at 95° F. for one month without deterioration, and that a voyage to India and back had been without effect on the activity of another batch. It must be admitted that this letter was not received without scepticism by many medical men in the East.

The writer has recently carried out a re-assay on a batch of American insulin which was received during the first week of April, 1924, and stored at room temperature in the laboratories here for six months before the assay was commenced. During this period the average temperature in the building at 9 A.M. was 79·6° F., at noon 84°, and at 3 P.M. 83·5°, with corresponding maximum and minimum temperatures of 84·5° and 75°, 89° and 77°, and 89° and 76° respectively.

The strength of the insulin was 28 units per c.cm. when shipped from America, but to allow for decrease in activity doses of 0·075, 0·1, and 0·125 c.cm. per kilogramme were given to the three rabbits in series (1). As the third rabbit became convulsed, the dosage was decreased to 0·056, 0·075, and 0·094 c.cm. in series (2), (3), and (4). The insulin was diluted so that the doses could be accurately given, and injections were made subcutaneously into both flanks of each rabbit. The animals had been starved for 24 hours and blood-sugars were estimated before injection, and 1½, 3, and 5 hours afterwards.

### *Effect of Tropical Conditions on Carbohydrate Metabolism of Rabbits.*

Applying the Toronto method of calculating unitage, the strength of the insulin, based on the results obtained from the first nine rabbits, shows a deterioration of about 40 per cent. after six months storage. Rabbits Nos. 10 to 12 (series 4) were the first local generation of Belgian hares imported from England some 11 months before, and they were given the same dosage per kilogramme as the rabbits in series (2) and (3) which had been purchased locally. None of these "local" rabbits became convulsed, yet all three in series (4) went into convulsions and, although given intravenous glucose and adrenalin, rabbit No. 12 died.

The number of rabbits available was insufficient for a very accurate assay, and the weights of rabbits Nos. 1 to 9 were considerably below standard, but it is noteworthy that the insulin assay on "local" rabbits showed a fall in potency of about 40 per cent., while the assay on the first local generation of Belgian hares indicated that the insulin was practically as potent as when it was shipped. It may be urged that Belgian hares are perhaps more susceptible to the action of insulin than other rabbits, but the experience of Bose and Acton[4] in Calcutta serves to negative this objection. These workers found that three original units of insulin per kilogramme weight caused a fall in blood-sugar of 45 to 50 per cent. in albino rabbits, and of 50 to 57 per cent. in Belgian hares, and that piebald rabbits were the most sensitive to insulin.

Climatic or dietetic conditions would therefore seem to modify the carbohydrate metabolism of the rabbit after many generations in the tropics so as to render it unsuitable for the standardisation of insulin, and

TABLE SHOWING RESULT OF RE-ASSAY ON A BATCH OF AMERICAN INSULIN IN THE TROPICS.

| Series and date. | Rabbit No. | Weight (g.) | Dose of insulin. C.cm. | Dose of insulin. C.cm. per kg. | Colour of rabbit. | Blood-sugar percentage. Normal. | Hours after insulin. 1½ | 3 | 5 | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| I. 30/9/24 | 1 | 1550 | 0·115 | 0·075 | Brown and white | 0·108 | 0·049 | 0·042 | 0·058 | — |
| | 2 | 1260 | 0·125 | 0·100 | Black and white | 0·112 | 0·059 | 0·054 | 0·065 | — |
| | 3 | 1350 | 0·170 | 0·125 | Albino | 0·100 | 0·037 | — | — | Convulsions 2½ hours after insulin. |
| II. 1/10/24 | 4 | 1298 | 0·073 | 0·056 | Albino | 0·165 | 0·120 | 0·059 | 0·062 | Animal struggled before commencement of experiment. |
| | 5 | 935 | 0·070 | 0·075 | Albino | 0·120 | 0·065 | 0·052 | 0·050 | — |
| | 6 | 1317 | 0·124 | 0·094 | Albino | 0·104 | 0·068 | 0·050 | 0·057 | — |
| III. 2/10/24 | 7 | 1122 | 0·063 | 0·056 | Albino | 0·096 | 0·053 | 0·047 | 0·071 | — |
| | 8 | 1300 | 0·097 | 0·075 | Albino | 0·098 | 0·046 | 0·050 | 0·062 | Hurried breathing 2 hours after insulin. |
| | 9 | 1057 | 0·099 | 0·094 | Albino | 0·145 | 0·055 | 0·052 | 0·065 | — |
| IV. 6/10/24 | 10 | 2285 | 0·128 | 0·056 | Belgian hare | 0·103 | 0·055 | — | — | Convulsions 2 hours after insulin. |
| | 11 | 2190 | 0·164 | 0·075 | Belgian hare | 0·112 | 0·050 | — | — | Convulsions 1 hr. 55 min. after insulin. |
| | 12 | 2080 | 0·195 | 0·094 | Belgian hare | 0·108 | 0·046 | — | — | Convulsions 1 hr. 40 min. after insulin. |

the writer hopes to confirm this observation by using successive generations of the strain of Belgian hares for insulin assay.

*Factors Affecting Stability of Insulin.*

Regarding the vexed question of the deterioration of insulin in the tropics, there is trustworthy evidence that some samples show considerable decrease in activity, while others retain their original potency for many months. We thus conclude that insulin may be stable at tropical temperature, but some batches are either impure or the character of the solution renders the preparation unstable. The logarithmic character of the curve obtained from Stott's results certainly shows that dissociation occurs in some batches. Insulin is known to be more stable in acid than in neutral solution, and Cheadle[5] has demonstrated recently that it can be autoclaved at 125° C. for 20 minutes with a loss in activity of 20 to 25 per cent. only, if in solution of pH 2, but that it loses all activity if the procedure is carried out in solution of pH 4. The writer has noted that a batch which gave indifferent clinical results was less acid in reaction than a more active sample, so that the pH of the insulin solution may be a factor in the deterioration of insulin at tropical temperatures.

*Summary.*

A batch of insulin was stored for six months in the tropics and then reassayed on local rabbits. It appeared to have deteriorated by about 40 per cent. The reassay was also done on the first local generation of recently imported rabbits. The results then indicated little if any deterioration.

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1. Stott, Major H.: Indian Med. Gaz., 1924, lix., 130.
2. Bose, J. P.: Indian Med. Gaz., 1923, lviii., 557.
3. THE LANCET, 1924, i., 101.
4. Bose, J. P., and Acton, Major H. W.: Indian Med. Gaz., 1924, lix., 336.
5. Cheadle, F. M.: Aust. Jour. Exp. Biol. and Med. Sc., 1924, i., 129.

# Clinical and Laboratory Notes.

## THE DIAGNOSIS OF TUBERCULOUS MENINGITIS IN CHILDREN.

BY W. L. KINNEAR, M.D. ST. AND.,
RESIDENT MEDICAL OFFICER, QUEEN'S HOSPITAL FOR CHILDREN, BETHNAL GREEN, E.

TUBERCULOUS meningitis is not an uncommon disease in children, and accounted for 9 per cent. of deaths in the medical wards of this hospital in 1923. It is a disease which must cause much anxiety to practitioners owing to the difficulty of its diagnosis in the early stages. On the average patients were admitted well on in the third week when signs of advanced infection were usually present. The ease with which a certain diagnosis can be made in hospital has possibly led to less attention being paid to the signs and symptoms of onset; but lumbar puncture is not practicable for most general practitioners, and a diagnosis is often arrived at by the failure of the usual remedies and the appearance of grave cerebral symptoms.

I have felt that a general description of the signs and symptoms, as is found in most text-books, could be made more useful by a table showing their relative frequency; individually they are not distinctive, and it is only when in combination that they point to the diagnosis. There are certain points of much importance which must be omitted from this table, such as the facies, the alteration in behaviour in each patient, &c. The signs and symptoms given below were all present on or before admission, this being the stage of the disease when they were last seen by the practitioner or when the mother brought her child to hospital for treatment. It is important to note that in this hospital the latter class is much the more numerous. No signs or symptoms developing in hospital are given.

I should like to comment on one point only, and that is on the asymmetry of distribution of the nervous symptoms. On looking over the notes I was much struck by the frequency of such signs as paralysis, twitching, spasticity, &c., confined to one limb or to one side of the body; the presence of Babinski's or Kernig's sign, abdominal reflexes, or knee-jerks on one side only. The temperature charts are frequently very suggestive of this trouble—an irregular, moderately raised temperature, a varying pulse-rate, and a persistent blank in spite of medicines in the column devoted to registering stools being the distinctive features.

*Analysis of 100 Cases.*

Lumbar puncture was done in 95 per cent.; post-mortem examination was done in 42 per cent. The average duration of illness from the first definite symptom—e.g., vomiting or convulsion—was 19·9 days. The average number of days in hospital was 8·2. The number of cases admitted when delirious or unconscious was 16. Forty-four were males and 56 females. A tuberculous family history was present in 34 per cent.

The age distribution was as follows:—

| | Per cent. | | Per cent. |
|---|---|---|---|
| 0–1 years .. .. .. | 18 | 4–5 years .. .. | 12 |
| 1–2 ,, .. .. .. | 24 | 5–10 ,, .. .. | 10 |
| 2–3 ,, .. .. .. | 18 | 10–14 ,, .. .. | 7 |
| 3–4 ,, .. .. .. | 11 | | |

The youngest patient was 3 months old; the oldest patient was 13 years 8 months old.

*Seasonal Incidence.*—64 per cent. of the cases occurred during the first six months. The largest number occurred in March, when 22 cases were admitted.

The symptoms and signs were as follows:—

| | Per cent. of cases. | | Per cent. of cases. |
|---|---|---|---|
| Vomiting occurred in .. | 89 | Babinski's sign present in | 31* |
| Constipation occurred in . | 81 | Screaming occurred in .. | 29 |
| Headache occurred in .. | 80* | Convulsions occurred in.. | 29 |
| Strabismus occurred in .. | 31 | Knee-jerks absent in .. | 27 |
| Stiffness of neck present in | 65 | Abdominal reflexes absent in.. | 20 |
| Kernig's sign present in.. | 51† | Twitchings occurred in .. | 15 |
| Head retraction present in | 35 | | |

* Over 2 years of age. † Doubtful in six.

*Temperature.*—The average temperature on admission was 99·8° F. Three cases showed no rise of temperature to 100° throughout. In ten cases the temperature rose over 105°. This was usually due to the ante-mortem elevation.

*Examination of Cerebro-Spinal Fluid.*—In nearly every case the fluid was under increased pressure, and a coagulum formed on standing.

| | |
|---|---|
| Average number of cells per c.mm. .. .. | = 73·0 |
| ,, percentage of lymphocytes .. .. | = 88·0 |
| ,, ,, chlorides .. .. | = 0·675 |

An interesting point was the diagnostic importance of increased globulin content, a definite cloud with the Noguchi reaction being sufficient to exclude cases of meningism in which the fluid was also usually under increased pressure.

## A CASE OF INTESTINAL OBSTRUCTION.

BY A. GRAHAM BRYCE, F.R.C.S. ENG.,
ASSISTANT RESIDENT SURGICAL OFFICER, MANCHESTER ROYAL INFIRMARY.

THE following case, from the unusual nature of the cause of obstruction, seems worthy of record:—

A married woman, aged 52, was admitted to the Manchester Royal Infirmary on March 8th with the following history. On Jan. 1st, 1924, she was suddenly attacked by abdominal colic and vomiting. The attack lasted for a week. Similar pain lasting for an hour had been present a fortnight before her admission. Thirty-six hours before being brought in she was again attacked by intermittent colic referred to the umbilical area. She had vomited several times during that period, but the vomiting did not become fæculent. The bowels had been opened three times normally since the onset. Except for the presence of some tenderness at and around the umbilicus and shifting dulness in the flanks,

examination of the abdomen, hernial sites, rectum, and knee-jerks showed nothing abnormal. The temperature was 99·6 °F., and the pulse-rate 100. A diagnosis of incomplete intestinal obstruction was made, and the patient was kept under observation for about two hours, but, owing to the severe and continuous nature of the colic, it was decided to operate.

At operation a fair amount of free serous fluid escaped. The cæcum was collapsed, and no greatly distended gut presented, but three irregular hard bodies were found lying close together within the lumen of the small intestine at a point estimated to be three or four feet from the ileo-cæcal junction. The intestine below the site of impaction was collapsed. The foreign bodies were removed through an opening in the bowel wall, which was immediately sutured and the abdomen was closed without drainage. Recovery was uneventful.

The foreign bodies were examined after removal. They were found to be chestnuts, of which the largest was of the usual size and the smallest half the size of an ordinary chestnut. All were minus the outer shell and covered by a thin layer of fæcal material. Inquiry elicited the fact that the patient had eaten roasted chestnuts on New Year's Day and had swallowed them whole. The interest of the case lies largely in the fact that the chestnuts had been quite unaffected by the digestive ferments over a period of nearly ten weeks.

I am able to publish this note by the courtesy of Mr. J. Howson Ray, to whose surgical unit the patient was admitted.

# Medical Societies.

## ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

AT two recent consecutive meetings of this Society Prof. ARCHIBALD YOUNG, the President, in the chair, a discussion was held on

*Rheumatoid Arthritis.*

Prof. R. STOCKMAN, opening the discussion, described the condition termed rheumatoid arthritis as most probably a group of closely allied germ diseases known and described under many different names—e.g., chronic articular rheumatism, chronic rheumatic arthritis, chronic fibrous rheumatism, chronic villous polyarthritis, nodose rheumatism, rheumatic gout, atrophic arthritis, Still's disease, chronic infectious arthritis, and so forth. The clinical course and morbid anatomy marked it as a germ disease of low virulence, but of extreme chronicity. As a rule, no organism could be found in the joints or other affected structures or in the blood, but in a certain number of cases (relatively a very small number) bacilli, diplobacilli, cocci, diplococci, and streptococci had been isolated from the joints and cultured outside the body. The probability was, he said, that there were several different causal organisms, but whether all cases were due to the same organism, or to various different organisms, the broad results for the patient were the same. The white fibrous tissues of the locomotory system of the body formed the point of attack, and essentially and in the beginning it was a fibrositis, with proliferation and increase of the affected fibrous tissue structures. There was never suppuration, and no local emigration of polymorphous leucocytes took place. Chronic hydrarthrosis of one joint was probably its mildest form, and from this there were all grades of severity up to polyarthritis with high fever. It usually began insidiously, the speaker said, in the small joints and progressed with little constitutional disturbance; much seldomer it began in the large joints, and then with more acute systemic symptoms. Ultimately in all cases it presented the general clinical aspect of a low chronic septic infection, and must be regarded as a very general infection, not merely as an arthritis. In all cases the fibrous tissue of the muscle, aponeuroses, fasciæ. and panniculis adiposus were more or less deeply involved and inflamed. In the joints it was the fibrous tissue of the synovial membrane and capsule which were primarily affected. The cartilage and bone were not primarily involved, but as the influence of disuse, muscular contractures, and other changes came into play, the bone got thinned and atrophied, the cartilage became rough or ulcerated, the fibrous capsule contracted and hardened, and ultimately a fibrous or a bony ankylosis might result.

With regard to the search for a focus of infection, it was remarked how very infrequently any focus could be identified with certainty. It was possible that in many cases the original focus had disappeared before the patient came under observation; and a joint might remain as a reservoir of infection after others had ceased to show active signs. Tonsillitis, boils, septic sores, pyorrhœa, chronic pulmonary or intestinal conditions, and so on, had been blamed, and the association of various skin conditions, such as psoriasis, had been noted.

*Treatment.*

The various methods of treatment, both local and general, were then described. The later symptoms and changes which followed as a result of the fibrositis were referred to, and the necessity for vigorous treatment by massage, movements, baths, and appropriate exercises was urged—anything rather than rest. Treatment must be directed (1) to restore movement in the joints by elongating the contracted muscles and shortening the elongated ones, so that they may each regain their normal action; (2) to get rid of the fibrositis in and around the joints and to stretch and render more pliable their ligamentous tissues and adhesions; and (3) to bring up the bulk and strength of the muscles. For the most part the stretching and movements could be done manually, but the assistance of splints was desirable in many cases. Forcible extension under an anæsthetic was to be avoided, but in certain instances the mobility of a joint could be more easily tested under chloroform. The fixation of a joint in plaster or splints for more than a few days was very inadvisable owing to the risk of immobility occurring.

Dr. DAVID CAMPBELL described the results of the treatment of rheumatoid arthritis by non-specific therapy—the so-called protein shock treatment. He described the technique which he had employed in 100 cases from 1921 to the present date, and showed various charts illustrating the general and local reactions following the injection. Of 70 cases treated up to November, 1923, 58 derived great benefit, both directly from diminution of pain and tenderness in the joints, and also indirectly from the consequent greater facility with which more effective local treatment by heat and massage could be carried out. The maximum benefit was obtained in those cases which had started acutely and with involvement of many joints. Of the 12 cases which showed no improvement, four were of long standing in which the disease process had become inactive. Seven reacted to each injection, but the infection remained active. Of the 58 cases improved by the treatment, 40 had, from periods varying from one to three and a half years, been able to perform all their ordinary duties, with no exacerbation of the joint conditions nor spread of the disease to other joints. In 16 cases in which relapse had taken place, a fairly advanced stage of the disease had been reached before treatment was started, while in several the treatment had been discontinued after two or three injections, owing to the great improvement shown. The advisability was discussed of continuing the injections after the active process had apparently ceased. In conclusion, the opinion was expressed that, while protein shock therapy could not be regarded as ideal, it offered greater probability of success than any other known methods.

Prof. STOCKMAN was of the opinion that protein shock therapy was capable of cutting short the infection in the early stages of the disease.

*Prevention of Deformity.*

Mr. JAMES RUSSELL, in discussing the surgical treatment of arthritic conditions, referred to the various deformities which might result from these diseases. He deprecated strongly operative treatment based on X ray appearances alone, and insisted that surgical interference could be justified only where improved functional value of the limb was likely thereby to be attained. The fundamental question was function, and mere deformity as such should not be allowed to assume undue importance. The commoner deformities of the various joints were then described and the methods employed for their prevention discussed. A number of splints were shown and the method of their use demonstrated. It was pointed out that the splints should be of such a type that they could easily be removed for massage and other local treatment. In the acute stage of the disease there was a limit to the patient's tolerance of treatment, and in such cases the skill and judgment of the surgeon might be taxed to the utmost. Once deformity had developed, any forcible movement was sure to be harmful, but gradual stretching by weights or splints could overcome many of these early contractures. In conclusion, Mr. Russell urged the necessity of physicians and surgeons appreciating the value of posture, during the acute stage of the illness, and splintage, in the prevention and control of deformity.

*Discussion.*

In the discussion which followed, Dr. W. S. SYME referred to the difficulty of finding a focus of infection, and urged that the examination of the throat and nose for any such focus should be more strict than was commonly the case. For example, it was often the most innocent-looking tonsil which showed the greatest degree of infection in the crypts when a thorough examination was made by pressing forwards the pillars and projecting the tonsil towards the observer. In the case of nasal infection, even more care was required to demonstrate the freedom from infection of the various sinuses. In some cases where generalised infection had occurred, removal of the primary focus did not afford relief, probably because secondary foci were then equally fertile as sources of infection.

Dr. J. N. CRUICKSHANK referred to the occasional occurrence of herpes after protein shock therapy. He quoted six cases in which severe herpes of the mouth and lips and surrounding area of skin had occurred. Subsequent injection of a fresh vaccine from the same stock was again followed by herpes. One patient had been treated by a vaccine from a different stock without the appearance of herpes. When treated by the vaccine which produced herpes in the other patients, he also suffered in the same way. These facts suggested the need for care in selecting a suitable stock vaccine.

Dr. MARION GILCHRIST spoke of the difficulties in the treatment of rheumatoid arthritis and of the problem of individual resistance to such infections. The vigorous application of all measures calculated to raise the patient's general resistance was essential. In the prevention of deformities and limited function, movement was important. Pain was a difficult symptom to treat, and in several instances she had found local X ray treatment of much benefit in the relief of pain. She wished particularly to emphasise the importance of treating the mental attitude of the patient. It was essential to increase the mental resistance of the patient to the disease.

Dr. G. H. CLARK referred to a point of interest in the treatment of resistant cases by heat. He had found that a dressing of methyl salicylate and carbolic oil along with the application of heat gave in some cases a much better effect than heat alone. He had also found better results in some cases with the Grevillite bath than with ordinary radiant heat.

# Reviews and Notices of Books.

FRANCIS GALTON.

*The Life, Letters, and Labours of Francis Galton.* By KARL PEARSON. Vol. II. Cambridge University Press. 1924. With 54 plates and many text figures. Pp. 425. 45*s*.

THE first volume of this biography was published in 1914; we have waited ten years for this, the second instalment; the third has yet to appear. And in the meantime circumstances have led to some alteration in its scope and method. In the happy days of pre-war printing ventures, the Galton professor had contemplated an issue of Galton's collected works, particularly desirable in the case of an author who dispersed a great amount of noticeable work among a variety of journals and magazines as well as writing his more formal books and scientific papers. This project has, we are sorry to read, perforce been given up. Instead, and as far as may be in substitution, the biography now gives a fuller account of his writings, summarising them in enough detail to enable the reader to apprehend what Galton did and, in the light of Prof. Pearson's comments, to appreciate what his doings stood for when they were done and what they stand for to-day. As far as the biography is concerned, this change is for the better. It involves, it is true, the expansion of the whole from two to three volumes, and the third is still unpublished. But it has led to an account of the life and work of a scientific man which is without parallel in recent English biography, and reaches a pitch of excellence of which it is difficult to speak without exaggeration; it was reached before by Prof. Pearson in his account of W. F. R. Weldon in the fifth volume of *Biometrika*, and the present volume alone of Galton's life is about ten times as long as that memoir.

If Galton had been a man of one idea or even of one recognised field of inquiry, if his own "Memories of My Life" had been something more than trivial (for they are hardly better than that), his biographer's task might have been relatively simple. Among his great contemporaries whose lives are classics, Darwin is evolution, J. D. Hooker is the Himalaya and Kew, even Huxley might almost be said to have lived in a groove. But anything which his amazingly curious mind happened to notice was a subject for investigation by Galton, and he had to an exceptional degree the habit of noticing things which other people had missed. Between many of his interests there was, of course, a nexus of relationship or development, but just as he was continually striking out as a pioneer into fresh topics, so he invented the idea that nearly all these interests were parts of a connected whole. This whole has no clear name; it is not anthropology in the ordinarily accepted sense, it is not eugenics as that term is commonly understood. We doubt whether more than a few people have been in a position to know what its content was before Prof. Pearson gave us this biography, and it is difficult to think of a more appropriate name than Galtonism.

The first volume was largely preparatory and brought Galton to the age of 32, an experienced traveller in foreign parts, married and prepared to settle to a quieter life. This second instalment tells us of his really effective middle life and develops the versatility of a mind which must surely have been one of the most genuinely original of last century. He writes the "Art of Travel," a standard book, which went through many editions, of recipes for camping, avoiding sore feet, dodging wild animals, and rolling up your shirt sleeves (which last is either quite wrong or applies to a kind of shirt not now in common use); is active at the Geographical Society; notices that very little attempt is made by meteorologists to get general rules out of their laborious data, discovers and names the "anticyclone," and on April 1st, 1875, procures the publication in the *Times* of the first of our familiar daily weather maps;

looks into spiritualistic phenomena; suggests a method of achieving a decimal system of coinage. These are a few of the items of his activity dealt with in the first chapter. We pass, then, to "Hereditary Genius" (published in 1869) and all the studies cognate to it which henceforward tend more definitely to group themselves round the study of the heredity of the mental and moral characters as a basis for race improvement and which centre in his three other fundamental books—"English Men of Science, Their Nature and Nurture" (1874), "Human Faculty" (1883), and "Natural Inheritance" (1889). There are interesting and less familiar experiments on the influence of blood transfusion and experimental Siamese twinning on heredity, undertaken with immediate reference to his cousin's hypothesis of pangenesis; composite photography; anthropometry and some correspondence with Florence Nightingale about a proposed professorship of applied statistics. Only cursory mention of some of the activities of these crowded years is possible. And Prof. Pearson, with his commentary and explanations, at once human and erudite, has woven it all into a tale which is of rare fascination in itself and has the truly Galtonian quality of suggesting how and where we may make further progress and help to run down some of the many hares that Galton started. Our gratitude to Prof. Pearson will be even greater if he will quickly produce the final volume which will deal with statistical heredity, correlation, finger-prints, and the rest of his subject's later work.

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INTERNAL DISEASES.

*The George Blumer Edition of Billings-Forchheimer's Therapeusis of Internal Diseases.* Edited by GEORGE BLUMER, M.A. Yale, M.D., David P. Smith Clinical Professor of Medicine, Yale University School of Medicine, Attending Physician to the New Haven Hospital. New York: D. Appleton and Company. 1924. With illustrations. In six volumes and an Index volume. Pp. 4834. £12 the set.

WHEN the practice of medicine first separated itself from the priestly vestments which clothed it in its early youth, men were wont to speak of the healing "art." With modern rationalism has come a tendency to regard this phrase as inapplicable to medicine, and to try to confine therapeutics to the administration of remedies for which a scientific basis of action can be discovered. So long as effective empirical methods are not scorned simply because we do not at present understand them, the efforts to explain their action can only lead to good. It is to America particularly that we have come to look for such efforts, and the volumes before us represent an attempt by more than 150 authors to deal with all the diseases which afflict the internal organs of man from the point of view of pathology, sociology, and treatment, leaving symptomatology and diagnosis almost out of consideration.

The first volume of this large series is entitled "Principles of General Therapy," and opens with a general account of the cell and its physiology as the rational basis of all therapeusis. From a disquisition on such general subjects as colloids, equilibrium, diffusion, ions, osmosis, &c., the reader passes on to a chapter on feeding, wherein he will find some helpful and elaborate diet tables and estimates of food values, of the digestibility of the various articles of diet, and of the effect of cooking on them. The chapters which follow give an outline of modern methods of hydrotherapy, exercise, light and radiation applications, and kindred subjects. The chapter on organotherapy deals with this vexed subject in a moderate and conservative manner. The second volume continues the general principles with a sensible article on psychotherapy as it comes within the province of the practitioner, and with chapters on immunity, anaphylaxis, and blood. The various methods of administering remedial measures are then considered, and the "special" division of the work opens with the infectious diseases. Tuberculosis and the pneumonias occupy the larger number of pages in this volume. The third volume deals with infectious diseases due to filter-passing viruses, under which heading are grouped—perhaps a little prematurely—acute arthritis and all the exanthemata. The mycoses, protozoal and metazoal infections follow. "The Intoxications" is the heading of the next group, in the course of which poisoning from all sources is considered, including food preservatives and belligerent gases. In the concluding chapters the subject of seasickness is treated with an appropriate breeziness. Rhinologists and psychotherapists will, perhaps, feel somewhat aggrieved at the exclusively anaphylactic treatment recommended for hay fever and asthma in Vol. IV. The deficiency diseases, ductless glands, vasomotor and metabolic diseases are dealt with in subsequent chapters, and the alimentary canal is then taken systematically, followed by diseases of the blood and lymph systems. The fifth volume treats of the thoracic organs, blood-vessels, and skeletal and excretory system and of occupational and tropical diseases. The concluding chapter gives a comprehensive survey of the various poisonous animals and plants and the treatment suitable to each. The final volume deals with the sexual system in both sexes, the nervous system, and eye and ear.

It will be seen that the range of the work is very extensive, but the treatment of each subject is by no means sketchy, such important practical details as diet tables, regimen of life, and suitable prescriptions being provided in every section. The bibliographical reference lists at the end of each chapter are full, and the reader who wants to pursue investigations further than the text takes him, or who wishes to trace recommendations to their source, will find no difficulty in so doing. The discussion of transmissible diseases and others having a social significance is characterised by a sympathetic and common-sense recognition of the personal problems of the patient as well as of the duty of physician and patient to the community. As will be seen from the summary of contents given, there is some overlapping and duplication, inevitable perhaps in a production for which so many writers are responsible, and the order of classification is one not wholly familiar to English readers, though based on rational principles. The indexing should serve to overcome this difficulty; each volume is fully indexed and a Composite Index to the entire work is bound separately for desk use. The volumes are disappointingly heavy in these days of light paper, but inasmuch as the work is essentially one for reference rather than steady perusal, this disadvantage is less important.

British medical men will find here a refreshing novelty of presentation of well-known treatments, and some new suggestions of real value.

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CLINICAL METHODS.

A Guide to the Practical Study of Medicine. Eighth edition. By ROBERT HUTCHISON, M.D., F.R.C.P., Physician to the London Hospital; Physician to the Hospital for Sick Children, Great Ormond-street; and HARRY RAINY, M.D., F.R.C.P. Edin., F.R.S.E., formerly Physician to the Royal Infirmary, Edinburgh. London: Cassell and Company, Ltd. 1924. Pp. 688. 12*s.* 6*d.*

THE new edition of "Hutchison and Rainy" has been revised by Dr. Robert Hutchison with the help of Dr. Donald Hunter, Dr. J. R. Marrack, Dr. P. N. Panton, Dr. John Parkinson, and Dr. George Riddoch. In 646 pages of text and some 40 pages of index are to be found the most remarkable summary extant of all that is best as regards the examination of patients. This is one of the books that may well stand as a proof of the high status of British medicine, and the reader puts it down with a feeling of gratitude to its distinguished authors, one of whom is unhappily no longer with us to enjoy its success. Complicated biochemical processes such as blood analysis are fully described,

but are relegated to positions which bring out their true relation to less "modern" but even more important methods such as the routine examination of the various systems of the body. On p. 253, "sulphanilic acid 1 c.c." should read "1 gram," a misprint which is reproduced from the original paper quoted on the same page; beyond this small error, we have found no mistakes in the descriptions of various complicated processes.

We hesitate to suggest that so trusted a servant should change his livery, but we feel that, when a book is of the excellence of the present one, a somewhat larger page would enable it to assume a form at once more dignified and useful.

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MATERIA MEDICA.

*A Text-Book of Materia Medica.* Being an Account of the More Important Crude Drugs of Vegetable and Animal Origin. Designed for Students of Pharmacy and Medicine. Fourth edition. By HENRY C. GREENISH, D.-ès-Sc., F.I.C., F.L.S., Professor of Pharmaceutics to the Pharmaceutical Society of Great Britain and in the University of London. London: J. and A. Churchill. 1924. Pp. 586. 25*s.*

THE term materia medica has changed its meaning gradually in the last 40 years. The term as used in this book corresponds to the modern use of the word; it gives the source and descriptions of the plants and plant-derivatives which are used in medicine. "Greenish" is a book primarily for the pharmacist; but there must even now be many physicians who do take an interest in their drugs, and for these it can only be a source of delight.

He is a clever writer who can make interesting a text-book on the source and structure of drugs, but Greenish, partly by the simplicity of his style and partly by the clever use he makes of his illustrations, arrives at success. A look at the well-chosen pictures gives confidence, and a search into the text confirms this confidence. No words are wasted: the writer has a task to carry out and he does it without much ado. We can recommend the book to all pharmacy students and to those medical men who want to know more of their drugs than that they come out of a chemist's shop and that they can be obtained by writing a prescription.

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INFECTIOUS DISEASES.

*Diagnosis and Treatment of the Infectious Diseases.* By FREDERIC H. THOMSON, M.B., C.M. Aberd., D.P.H. London: H. K. Lewis and Co., Ltd. 1924. Pp. viii.–208. 7*s.* 6*d.*

Dr. Thomson's valuable work in connexion with many of the infectious diseases is well known, and the publication in this volume of his post-graduate lectures will receive a wide welcome. The book is admirably suited for the busy general practitioner, containing as it does in compact form all that is material regarding the differential diagnosis and treatment of the infectious diseases liable to be met with in this country. At the same time it will prove of great interest to those whose work lies in fever hospitals and who are desirous of comparing their own methods with those of one whose prolonged experience commands respect. A short chapter, full of useful information, on the conveyance of infection opens the volume, and the possibilities of transmission of droplet infection by the air are briefly discussed, conclusions being drawn from the results of the author's experiments with "bed isolation" methods of nursing. It is interesting to note his belief that in measles the infectivity of the patient ceases with the disappearance of the rash and that in chicken-pox probably does not outlast the first week of the eruption, or in mumps the subsidence of the swelling. Dr. Thomson is more cautious regarding whooping-cough, and contents himself with saying that infection has gone when the patient ceases to whoop, whereas many hold that there is very little risk when once the paroxysmal stage has fully developed.

The chapters on the individual diseases are all good, those on small-pox, chicken-pox, and diphtheria particularly so. Many hospitals have discarded all local treatment of the throat in diphtheria, but it will cause surprise to learn that even in septic scarlet fever the same course is recommended. That much unnecessary exhaustion has been induced by persisting with local treatment must be admitted, and it is reassuring to hear that Dr. Thomson considers that the patients do quite as well without the traditional swabbing or douching of the throat. Throughout the book the author's suggestions for treatment seem eminently sound and sensible. An excellent section is that on tracheotomy. The few plates, chiefly illustrating small-pox and chicken-pox, are admirably chosen, and the book is clearly written and well printed.

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THE SCIENCE AND ART OF LIVING.

By LEONARD WILLIAMS, M.D. London: Hodder and Stoughton. 1924. Pp. 240. 5*s.*

Dr. Williams's little book is didactic and propagandist, to use his own words, but the teaching and the advocacy are very entertaining. They centre round the author's belief that the crime of our civilisation is gluttony, begotten of an arrogant assumption of superiority. To eat, whether you want to or not, because it is one o'clock, is to the author one of the most fantastic acts of physiological folly that can well be perpetrated. Only if the bowel is supplied with plenty of vitamins does it empty itself automatically and generously; and the cooking-stove to the author is one of man's most deadly inventions, deadlier than the spirit-still, and only to be classed with the closed window. Round this thesis it would be easy—it has, in fact, been done—to write a very dull book, but Dr. Williams castigates others with good humour. He scoffs at the little luxuries to which man has accustomed himself "to keep up his strength," "to pull him together," "to neutralise acid," and so forth. Any suggestions to the contrary, to the effect that no such reinforcements are needed, sends the subject off to the miracle-monger, for he does not know what Dr. Williams knows, that man is, in fact, at any given moment, a resultant of his endocrine hormones.

So much for the science of living. Part II., on the art of living, contains much sound advice for local hygienic precautions. It is not, the author thinks, the pressure of the hat that causes baldness, but the harbouring of dirt; for a man will wear the same hat month after month, perspire in it, leave it about in all manner of odd places, without more than a perfunctory superficial external brushing. Who desires to retain a crop of hair should wash the inside leather band with soap and water at least once a week. The town-dweller should cleanse the inside of his nostrils morning and night with soap and water, adding some volatile antiseptic oil during a time of epidemic. He should avoid all the sticky foods represented by starches and sugars, all concentrated foods (beef-tea, Dr. Williams remarks, is more an excrementitious substance than a food), he should avoid misinterpreting as hunger the sinking feeling in the pit of the stomach, when it is really a form of indigestion for which the proper treatment is not tea but muscular exercise. An occasional three-day fast is enjoined in order to use up the material unwittingly put by by the body for a rainy day, but the fast to be beneficial has to be cheerful and devoid of self-pity. The hungry reader will be relieved to find that after observing all the author's maxims, an evening meal will still remain for him consisting of fish and a salad, bird with a green vegetable, toast, cheese and fruit, varied with some of the etceteras such as chicken's liver and cod's roe—for the rational diet is in no sense synonymous with starvation diet.

Dr. Williams desires to rouse his readers from intellectual lethargy in matters scientific, and induce them to revise their standards and uplift their ideals. His attempt is stimulating and piquant.

## PEDIATRICS.

*Clinique médicale des enfants: Affections de l'appareil respiratoire.* By Prof. P. NOBÉCOURT. Paris: Masson et Cie. 1924. Pp. 348. Fr.22.

THE attempt to teach clinical medicine by writing a book always seems a little paradoxical, but Prof. Nobécourt has succeeded in bringing the physician as close to the bedside as the written word will permit. As he says in the preface, his aim has been to paint complete pictures without any unnecessary detail, to convey clear-cut impressions and to ignore all that is hazy and uncertain. Much of this book deals with case-reports, but they are not like the ill-assorted clinical notes sometimes used as padding when the sources of inspiration run dry. Prof. Nobécourt's case-reports are strictly pruned, and he has the rare gift of describing a case in words that vividly conjure up a mental picture. Those of his readers who have enjoyed the privilege of listening to Sir Clifford Allbutt's bedside demonstrations will be reminded thereof when they take up this book. Passing from generalities to the special case, and back again to generalities, the author attaches one to the other in the way best calculated to leave a permanent impression on the reader's memory. With the atmosphere of the sick-room rather than the library, the author is as justified as anyone can be in calling this a clinical treatise. The sub-title—Affections de l'appareil respiratoire—gives the best summary possible of the contents of this volume.

## REMINISCENCES OF AN OLD PHYSICIAN.

By ROBERT BELL, M.D., F.R.F.P.S. London: John Murray. 1924. Pp. 291. 16*s*.

Dr. Bell is well known as an earnest advocate of the treatment of cancer without operation. The main part of his book, however, deals with his life in general apart from purely professional work, early education, fishing excursions, travels, views on art and architecture, poetical compositions *et hoc genus omne*. Though a Scot, he was born in Alnwick, studied at Glasgow, and practised at first in that city and also in Durham. In 1893 he married and went for a continental honeymoon. Among other places he went to Florence, concerning which place he says, "it does not seem to be generally known that the real and original Chartreuse Monastery—for it is the oldest edifice of the order—is situated within a short carriage drive from Florence." It certainly is not generally known; it is not even the fact. The real and original Chartreuse Monastery is not far from Grenoble, where St. Bruno founded his order in 1086, though it is true that the existing buildings mostly date from the seventeenth century. Dr. Bell was evidently much struck by the cleverness of the Florentine school of copyists, and tells us that he purchased a copy of a picture by Carlo Dolci, a strange choice in a town which is full of works by Botticelli, Gentile da Fabriano, Filippo Lippi, and Ghirlandajo, to mention only a few. Dr. Bell also purchased a copy of a picture in the Monastery of St. Marco by a painter whom he calls Fra Angelica. The only thing that he tells us about his stay in Venice is how he successfully treated a gentleman from Leeds who suffered from constipation with a dose of castor oil. In Milan, though it is true that he considers that Leonardo's "Last Supper" "still held its position as a masterpiece," he apparently missed the chief thing to notice in the Duomo, the two *ambones*, and was struck chiefly by the modern glass and the imitation of groining on the roof. Dr. Bell's artistic tastes, however, improved, for in 1902, on his visit to Spain, he greatly and properly appreciated the Alhambra and Toledo Cathedral. In the same year Dr. Bell published an "In Memoriam" upon Queen Victoria, which he gives in extenso and which might have been written by the Rev. Robert Montgomery. Lest we shall be accused of doing nothing but cavil, we express our hearty thanks to Dr. Bell for the following reminiscence (v. p. 236). He was one day walking down Sauchiehall-street in Glasgow, when he was accosted by an inebriated person, who "addressed me as follows: 'W-will yo-you p-please to tell me wh-which is the o-other si-side of the street?' I replied, pointing across the way 'Over there, of course.' Whereupon he said, 'Do-on't try to ga-ga-gammon me, for I was o-o-over th-there and a ma-ma-man t-t-told me it was over here.'"

## INSANITY AND LAW.

A Treatise on Forensic Psychiatry. By H. DOUGLAS SINGER, M.D., M.R.C.P. Lond., and WILLIAM A. KROHN, A.M., M.D., Ph.D. Philadelphia: P. Blakiston's Son and Co. 1924. Pp. 437.

ONE of the objects in the publication of this book is to bring about a better understanding between the medical and legal professions in matters of lunacy. It may be considered in two parts, of which the first is a text-book of psychiatry for the lawyer, and the second a law manual for the physician. The latter section deals, of course, with procedure in the disposal of the insane, criminal responsibility, testamentary capacity, and a great variety of other medico-legal problems which insanity may present. There is an excellent chapter entitled "The Physician in Court." The book will no doubt serve a useful purpose in America, but its value in England is limited by differences between the lunacy laws of the two countries.

## ANNALS OF ROENTGENOLOGY.

Vol. IV. Normal Bones and Joints Roentgenologically Considered. By ISIDORE COHN, M.D., F.A.C.S., New Orleans. New York: Paul B. Hoeber. 1924. With 220 radiograms. Pp. 218. $10.

THE series of monographic atlases grouped under the title of Annals of Roentgenology is edited by James T. Cast, an ex-president of the American Roentgen Ray Society. This volume is the last published, but six others are in actual preparation and others are being planned. It is to be hoped that nothing will hinder the early publication of those already in hand, and that those planned will embrace the whole of the wide field of roentgenology. This volume is a study of the appearance of normal bones and joints, and is a wonderful pictorial record of the changes which occur as a child grows into adult life. The extraordinary care which has been taken is well illustrated by the section on the elbow-joint, for the following radiographs are shown: at 17 months, 1; 5 years, 3; 6 years, 2; 7 years, 1; 8 years, 4; 9 years, 3; 10 years, 2; 11 years, 5; 12 years, 6; 13 years, 8; 14 years, 3; 15 years, 3; 17 years, 3. These 44 plates are all of normal joints, and there follow 15 plates illustrating the architecture of the joints with regard to normal angles, and lastly 30 photographs of fractures and the patients concerned before and after treatment. All the other joints are treated in a similar manner. The author explains in the text the details of ossification, of the structure and architecture of the joints, and presents the whole in a most attractive way. Later his points are emphasised by various fractures, and the case-histories of his patients are given in full. It is, of course, impossible to have even the smallest knowledge of abnormalities until the normal appearances are thoroughly understood. This monograph presents this aspect in the fullest possible manner, and meets an urgent need in the literature of bone and joint surgery. In the announcement in front of this volume we see no promise of a volume devoted to the pathological conditions of bones and joints, and we hope that this series will not be considered complete until such a volume has been written.

# The Conduct of Medical Practice.

*A Series of Articles by Experts dealing with the Difficulties Encountered in Professional Life and How to Meet Them.*

## XXIV.—DOCTOR AND CORONER.

BY G. ROCHE LYNCH, O.B.E., M.B., B.S. LOND., D.P.H.,
OFFICIAL ANALYST TO THE HOME OFFICE; PATHOLOGICAL CHEMIST TO ST. MARY'S HOSPITAL; LECTURER ON FORENSIC MEDICINE AT WESTMINSTER HOSPITAL.

THE duty of a coroner is to hold inquests on: (1) cases of death under certain circumstances; (2) treasure trove; (3) fires in the City of London. We are only concerned here with the medical aspects of the coroner's duties.

The object of an inquest is to ascertain if death is due to criminal, avoidable, or natural causes; further, to enable the guilty to be brought to justice, and to prevent and to limit accidents. Cases of death occurring in certain institutions are made by statute the subject of a coroner's inquest; this is done mainly to satisfy the public and the immediate relatives, so that any criticism directed towards those who were responsible for the custody of the deceased during life may be properly inquired into. Deaths from accidents in mines or factories fall into the same category, where the factory inspector must be informed by the coroner. Inquests of this type are just as much in the interest of the medical profession as in that of the public.

### *Information.*

The circumstances in which an inquest is to be held in cases of death are stated thus in Section 3 (i) of the Coroners Act, 1887: "Where a coroner is informed that the dead body of a person is lying within his jurisdiction, and that there is reasonable cause to suspect that such person has died either a violent or an unnatural death or has died a sudden death of which the cause is unknown, or that such person has died in prison or in such place or under such circumstances as to require an inquest in pursuance of any Act," the coroner is to proceed to summon a jury and hold an inquest, whether the cause of death arose within his jurisdiction or not. It follows that a coroner does not take action until he receives information. Such information may come from any one of six sources: (1) his officer; (2) the police; (3) a registrar of births, deaths, and marriages; (4) friends or relatives of the deceased; (5) medical practitioners (in attendance during life or after death); (6) private individuals. The duty of informing a coroner of a death, where it may be deemed desirable to hold an inquest, is not thrown on any person or persons by statute, except in the following cases:—

1. A manager of an asylum in cases of insane persons under his charge.
2. Cases of judicial hanging by the sheriff (who must inform the coroner prior to the execution).
3. Deaths in prison.
4. Deaths which come within the scope of the Infant Life Protection Acts.

Registrars of births, deaths, and marriages are instructed by the Registrar-General to report to the coroner all deaths:—

1. Occasioned directly or indirectly by violence.
2. Occurring under suspicious circumstances.
3. The cause of which is stated to be unknown.
4. Which are stated to have been sudden, and respecting which no certificate issued by a medical man is produced.
5. Of infants in houses registered under the Infant Life Protection Acts.

The coroner, having decided to hold an inquest, must do so within reasonable time of the death, although there is no statutory time limit laid down, and it is worthy of note that in one case the inquest was not held until 19 years after the death. Inquests have been threatened, or even held, upon bones, as to which it has been evident that they belonged to more or less remote antiquity. To hold inquests in such cases is obviously unnecessary. In exhumation cases a considerable time may elapse between death and the inquest. It is the duty of a coroner to hold an inquest on any portion of a body that may be found.

### *Medical Man as Informer.*

When information has reached a coroner, he causes his officer to make inquiries, and as a result of the latter's investigations he decides whether or not an inquest is to be held. The duties of a medical man in relation to a coroner are all too vaguely laid down. By the Registration of Births and Deaths Act, 1874 (Section 20, Subsection 2), it is ordered that, "In case of the death of any person who has been attended during his last illness by a registered medical practitioner, that practitioner shall sign and give to some person required by this Act to give information concerning the death, a certificate stating to the best of his knowledge and belief the cause of death," the subsection giving particulars as to how the certificate is to be dealt with. There is a need, however, for specific statutory directions to the medical man as to what he is to do where he cannot conscientiously give a certificate as to the precise cause of death, whether he believes it to be a natural death or not. In practice he will generally inform the coroner if he finds that no one else is obliged to do so, particularly where he knows or has reason to think that death is not due to natural causes, or he will give a certificate so worded that the registrar will refuse to act upon it, and will inform the coroner. It may not be necessary for the medical man to inform the coroner himself, in fact, neither under this Act or any other Act is there any legal obligation for him to inform the coroner. In practice, however, he can gain nothing by following the letter of the law, for the coroner is bound to receive information from other sources eventually, and the net result of this strictly legal proceeding on the part of the medical man would be a general delay of the proceedings and a general inconvenience to all concerned. The medical man, on the other hand, is warned to be certain of his facts before he gives information to a coroner, for should his reasons for his action be unsubstantiated by fact, he may find himself in a very false position at a later period.

Accepting the principle that it is a duty of the medical man to inform the coroner in cases which are likely to be the subject of a coroner's inquest, the next point is what type of case should be notified. Many cases leave the medical man in no doubt as to his procedure, but there are a considerable number of cases in which one coroner would decide to hold an inquest whereas another would consider it unnecessary, for coroners interpret their duties very differently. Medical men are in a difficulty here, as by reporting some cases in which a coroner does not hold an inquest they may incur hostility from relatives, and, on the other hand, by reporting too few their action may be criticised by the coroner. To overcome this difficulty, the prudent medical man will soon learn the idiosyncrasies of the coroner of his district and act accordingly. He may, however, find a simple course in difficult cases and one which is quite in order—namely, to give a death certificate and at the same time inform the coroner that he has certified, and also of the salient facts of the case.

The following rules may assist him:—

1. Report if there is a history of an accident, no matter how remote.
2. Report to the coroner (if he does not consider that he can conscientiously give a certificate assigning a natural cause for death) any facts which cause him to abstain from doing so or which point to the case being one for an inquest under the section of the Coroners Act quoted above. He

will remember that the coroner is to act where he has "reasonable cause to suspect" and that a coroner has jurisdiction to hold an inquest, and is justified in doing so, "if he honestly believes information which has been given him to be true, which, if true, would make it his duty to hold such an inquest." [1]

3. Take no action in cases of suspicion only, unless the details on which the suspicion is based are capable of being substantiated in the witness-box.

4. Report those cases where the medical man knows that if he does not report someone else will.

*Officer's Inquiry.*

As soon as the information is lodged the coroner's officer is directed to make inquiries. Such inquiries are almost certain to include the practitioner involved. The practitioner should be at all times willing to help this officer in every way, but at the same time he must remember that the statement he makes to the officer, although of no legal import, is used by the coroner as the basis of his examination of the practitioner in the witness-box. He must, therefore, be guarded in what he says. Further, as this examination by the coroner's officer is not a legal proceeding, the doctor may refuse to answer any question, especially those involving the confidential relations of doctor and patient, and those which may in any way reflect on his professional capabilities or conduct. But bearing this in mind, the practitioner is urged to be open in his dealing with this officer, as a refusal to give information, although quite within the rights of the practitioner, may place him in a false position at the subsequent inquest. Regarding the confidential relations of doctor and patient, the practitioner should decline to give any information to the coroner's officer. He should wait until questions involving this relationship are put to him in the witness-box and then only answer them after his professional protest has been over-ruled.

*Post-Mortem Examination.*

The coroner, having decided to hold an inquest, issues a warrant and summons various witnesses to attend. In the case of the medical man he may receive also an order to make a post-mortem examination, and, if necessary, an analysis of the viscera. The analysis being a specially skilled process should only be undertaken by a trained toxicologist, and no coroner would expect the medical practitioner to undertake it. The performance of a post-mortem examination is generally delegated to the medical practitioner associated with the case, but there is a growing tendency amongst some coroners to employ skilled pathologists for this purpose. The practitioner associated with the case should be present.

The holding of a post-mortem examination rests entirely with the coroner, who is naturally guided by the statements taken by his officer from the medical man and others. Here again there is a need for caution lest the coroner is led to think that the medical man is so satisfied as to the cause of death that no post-mortem examination would be necessary. It cannot too often be emphasised that if a case has features which make it a proper subject of a coroner's inquest, it is almost always advisable to hold a post-mortem examination. Over and over again the interests of justice have been defeated or jeopardised by the failure of a coroner to order an examination. However, in justice to the coroner, it is fair to say that often the complete failure of a local authority to provide suitable facilities for this purpose has influenced him in his omission. The Public Health Acts in the majority of cases only give power to the local authority to provide mortuary and post-mortem accommodation, but do not make it compulsory. In certain instances there is no doubt that avoidance of post-mortem examinations and of toxicological analyses is dictated on the grounds of economy.

Medical men should beware of making a post-mortem examination unless they receive written authority from the coroner to do so. The body is under the absolute jurisdiction of the coroner, and even if he should give verbal consent such as "I do not order a post-mortem examination, but you may make one yourself if you like," on no account should the medical man act, for, should any future question arise, the doctor will be unable to shelter under the coroner, who has only power to act in the prescribed form. In such a case the doctor, of course, gets no fee for the examination. In important cases a skilled pathologist is sometimes called to make a second examination, which can only be legally done through a request made to the coroner by the jury. When a post-mortem examination is made, in every case without exception all organs, including the brain, must be examined by the medical man personally, and the work should not be delegated to the attendant. Those present at the examination, other than the attendant, should be persons authorised to be there by the coroner in writing.

During the examination, if the medical man as the result of his investigations has any suspicion that the deceased has died from the effects of poison, or is unable to exclude poison, it is his duty to place the whole (not portions) of the more important organs into perfectly clean stoppered jars which he himself has cleansed just prior to use, preferably each organ in a separate jar. He should on no account add any preservative. By this means the liver, kidneys, stomach and contents, bladder and contents, and intestines in ordinary cases, and other organs in special cases, should be reserved. The jars should be made of glass entirely, as, for instance, a jar involving the use of indiarubber bands is unsafe, for a portion may be detached and become intermingled with the viscera, with the result that the analyst would probably find antimony to be present, as manufactured indiarubber often contains this metal. Such has actually happened in one case. The jars should be tied down effectively and sealed with a seal. Each jar should be labelled with the name of the deceased, date of examination, nature of contents, and signed by the person performing the examination. These jars should be handed to the coroner's officer and a receipt obtained for them. The coroner should be then informed that in medical opinion an analysis should be made. Too much care cannot be exercised over these details, which are so often neglected. Points of this kind are sometimes challenged by the defence, should a criminal charge supervene.

In cases where it is possible that the professional conduct of a medical man may be questioned by anyone, the coroner wisely directs another medical man to make the post-mortem. In such cases the medical man concerned may elect to be present himself or be represented at the examination by a colleague, to which the coroner usually gives consent although he is not in any way bound to do so. Similarly, an accused person or one who may be possibly the subject of subsequent proceedings, may also be represented by a doctor at the examination. The medical man should make careful notes at the time of or directly after the examination of all his findings. Where a witness on oath before the coroner has ascribed death to negligence or improper treatment by a medical practitioner or other person, "such medical practitioner or other person shall not be allowed to perform or assist at the post-mortem examination." [2]

It will be remembered that in the recent trial of Dr. Hadwen a point was made for the defence that he had not been given an opportunity to be present at the post-mortem examination of the deceased child. If authority was cited for any *right* of a medical man, or any other person, charged to be present on such an occasion it was not reported in the newspapers.

[1] Rex *v.* Stephenson, 13 Q.B.D., 331.

[2] Coroners Act, 1887, Sec. 21, Subsec. 2.

*Evidence at Inquest.*

The coroner is not bound in any way to follow the rules of evidence which are strictly observed in other courts. He may take or refuse any evidence or testimony that he pleases. It is customary in all courts for the witnesses to remain outside the court until they are called to give evidence, after which they are allowed to remain in the court. The medical man, however, whose testimony is often taken last, is permitted to be present during the whole of the proceedings, as is the custom in other courts. His position is one of an expert witness and his presence in court is considered desirable so that he may hear the evidence given that it may assist him in arriving at his opinion as to the cause of death. Nevertheless, the coroner, as also the magistrate or presiding judge in other courts, may direct the doctor to remain outside the court until required.

Having been sworn, the medical man should give his evidence briefly and clearly, avoiding the use of technical terms wherever possible, and if such are necessary he should explain the same in simple phraseology. Above all, he should never be tempted to take up the position of lecturer and give the coroner and jury a discourse or a verbose account of what in his opinion were the circumstances of the death. Such advice appears to be superfluous, but evidence, if it may be called so, of this type is still too often given in these courts. The medical man must remember that the coroner's court is also a court of record, and that everything pertinent to the case is taken down in writing by the coroner or his clerk, and that he is subsequently called upon to sign this written statement. This document comes into the hands of the presiding authority of other courts, civil or criminal, and anything the doctor has said at the coroner's court in an unguarded moment may be thrown at him subsequently, with the result that he may be made to look foolish. When he has completed his evidence the coroner will read the transcript over to him and he will sign the statement. If he is in any way in doubt about what is written, he should make corrections at the time and read for himself carefully what is written, as once he has signed no correction may be made. He will then be bound over in a certain sum to attend at some other court in due course, if the case is to go further.

These remarks apply to every inquest, no matter how straightforward the case appears to be, and it must be remembered that there is always the possibility of any case being reopened in civil or criminal courts.

*Fees.*

Medical witnesses are by law (Coroners Act, 1887) allowed one guinea for attending to give evidence, or two guineas for making a post-mortem and giving evidence. No provision is made for mileage or for adjourned sittings, at all of which the medical man is bound to attend, unless specially released by the coroner. There has always been some doubt whether resident medical officers of institutions, whose duties are to attend on the inmates of institutions such as lunatic asylums, hospitals, infirmaries, &c., are entitled to receive fees. So far as hospitals supported by voluntary contributions are concerned, the medical man is not entitled. The test usually adopted is whether the institution is supported by voluntary subscription or not. It has always been customary for medical officers of those not supported by voluntary subscription to be paid, but recently in some cases payment has been refused. The wording of the Act is obscure, and a test action to settle the point would be an advantage. If it can be upheld that medical officers of infirmaries can be refused their fees, it seems likely that all institutions in which sick persons are attended may be interpreted as coming under the scope of Section 22 of the Coroners Act, 1887. The matter is under acute dispute just now.

*Anæsthetic Deaths.*

From the purely legal aspect it would seem clearly the duty of the coroner to hold inquests in this class of case. Exactly what is meant by the terms "anæsthetic death," or "death from anæsthesia," is very difficult of definition. The anæsthetic is usually deemed to be finished as soon as the patient is "round from the anæsthetic." In most cases as soon as this stage is reached the patient is deemed, so far as the coroner is concerned, not to have died from the effects of the anæsthetic. It is obvious that in many cases where operations are followed by death inquests are unnecessary. The anæsthetist is quite aware that the patient may not survive the operation owing to the gravity of the condition. On the other hand, where an apparently healthy person undergoing a minor operation, or even a major operation which is not an emergency, dies under the anæsthetic, it is eminently desirable for an inquest to be held. No medical man has anything to fear if his procedure was appropriate to the circumstances. The surgeon has been held at law to be responsible for everything which takes place in the operating theatre, and his testimony at the inquest is as important as that of those who in the eye of the law are his assistants.

*Infanticide.*

It is the duty of a coroner to hold an inquest on all newly-born children where there are any suspicious circumstances relative to the death, and in certain cases under the Infant Life Protection Acts. There is, however, in this case a difficulty. A still-born child is not a person within the meaning of the Coroners Acts, and in many cases live birth can only be proved by a post-mortem examination. A coroner, however, who has reason for thinking that a child may have been born alive, can decide to hold an inquest, and having so decided can order a post-mortem examination. If the examination establishes still-birth the right course appears to be that, evidence to that effect having been given, the inquest should conclude with a verdict of still-birth and that the coroner should then give his order for burial of the body in accordance with the Births and Deaths Registration Act, 1874, Section 18, c. Further legislation will no doubt deal with still-births in relation to inquests, for which the law at present makes no specific provision.

# Reports and Analytical Records.

## AGOTAN.

(HOWARDS AND SONS, LTD., ILFORD AND LONDON.)

WE have received a bottle of Agotan tablets showing that the convenient form in which this preparation is put up and the care with which it is distributed have been maintained. Agotan, which is of value by increasing the excretion of uric acid and urates in the urine, is identical with the preparation described in the British Pharmaceutical Codex as Quinophan (phenyl quinoline carboxylic acid), though a higher standard of purity is claimed for it. We have noted in these columns previously the chemical constitution of the preparation, and welcome such efforts to keep in this country the manufacture of synthetic drugs whose value has been proved in practice. On this last point we may say that we have received professional evidence of undoubted standing.

## OSTELIN.

(GLAXO, OSNABURGH-STREET, LONDON, N.W. 1.)

This is an elegant little preparation consisting of an unsaponifiable fraction of cod-liver oil suspended in glycerine so that 3 minims are equivalent to 1 drachm of the original oil. The use of the preparation is obvious where the ordinary administration of cod-liver oil is attended with difficulty. The proprietors publish an interesting pamphlet from their medical department in which X ray photographs are given of the

various stages observed in a case of rickets treated with ostelin in a London hospital. The brochure indicates the value of the preparation as an anti-rachitic factor, suggesting that its use to prevent dental diseases in children follows on the lines of the experiments published in the *British Medical Journal*[1] last August by Mrs. May Mellanby.

### "GADUS" JELLY.

(HEYERDAHL PRODUCTS CO. (ENGLAND), LTD., 36, REGENT-STREET, CAMBRIDGE.)

This preparation of cod-liver oil is also devised to make the administration of cod-liver oil pleasant to children. The jelly is manufactured from high quality Norwegian oil under the direct supervision of experts and is so flavoured that, although 30 per cent. of cod-liver oil is present, the fishy flavour, which is nauseous to some more than others, is concealed. The specimen jar sent to us contained approximately 80 teaspoonfuls, and the recommended dose varies from one level teaspoonful to two level tablespoonfuls per diem, according to the age of the subject. We need not expatiate on the use in many directions of a cod-liver oil which is agreeable to small patients, for the answer which children make to regular dosage in suitable cases is familiar to us all.

### OXOID GLAND PREPARATIONS.

(OXO, LTD., THAMES HOUSE, LONDON, E.C. 4.)

The firm of Oxo, Ltd., now manufactures a large selection of organo-therapeutic gland products, comprising ampoules of liquor hypophysis and adrenalin solutions, suprarenal gland tablets, anterior and posterior lobe tablets, and also a varied assortment of pituitary and thyroid gland tablets—ampoules of liquor hypophysis 10 per cent. (0·5 c.cm.), and 20 per cent. (1·5 c.cm.) suprarenal gland tablets and adrenalin tablets. All these preparations have been tested physiologically and adjusted to a uniform standard of activity, and many or all of them have been noted at different times in medical literature. The way in which the preparations are put up for storing or for distribution is excellent in its convenience, while the range of dosage is large. The value of the gland products becomes yearly more widely recognised by the medical profession, making the need all the greater that the profession should be able to rely upon standard manufacture.

### (1) ATOPHAN; (2) VERAMON.

(A. AND M. ZIMMERMANN, LTD., 3, LLOYD'S-AVENUE, LONDON, E.C. 3.)

1. Atophan or Acidum Phenylcinchoninicum, which has also been noticed under the name of Phenoquin, has been found to facilitate the elimination of uric acid in gout and rheumatic affections, and in the columns of THE LANCET reference will also be found to the value of the preparation in neuralgia and sciatica. The preparation is put up in boxes of 20 tablets, each containing 7½ gr. Even in a dose of this kind a definite increase in excretion of uric acid within an hour can be observed. The action is attributed to some alteration in the fermentative processes which regulate the oxidation of the purin bases, but precaution should be taken in raising the doses as unpleasant effects have been known to occur. Some interesting observations on the use of this drug will be found in THE LANCET, 1915, i., 1092, reporting the work of Dr. P. Biffis, whose results were published fully in *Il Policlinico*. The tablets are best taken after meals and swallowed whole followed by a glass of water.

2. Veramon. This preparation has now been in the hands of the medical profession for some three years, and clinical evidence is forthcoming of its merits as an analgesic especially in peridontitis, neuralgic headache, and migraine. It has also been found to relieve the headache accompanying intestinal disorders. The compound is a combination of amido-pyrin and veronal.

[1] August 30th, 1924, p. 354.

### PETROLAGAR.

(DESHELL LABORATORIES, LTD., SENTINEL HOUSE, SOUTHAMPTON-ROW, LONDON, W.C. 1.)

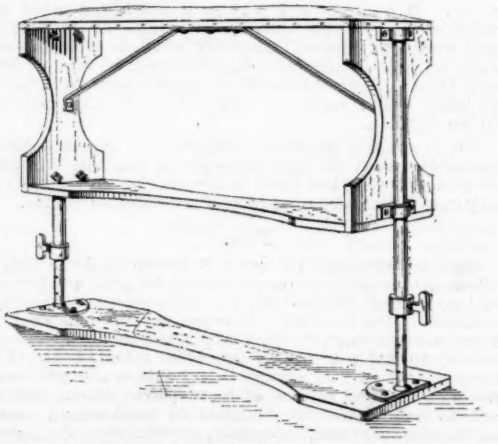
We have received samples of this emulsion of medicinal liquid paraffin and agar-agar. Petrolagar is sent out in two forms, with and without phenolphthalein. The emulsification of the mineral oil tends to increase efficiency as an intestinal lubricant, while the agar-agar mechanically aids the action of the bowel from its well-known physical qualities. The addition of phenolphthalein gives a purgative action to the mixture, of which advantage can be taken in suitable cases. Practitioners will find this preparation very suitable for patients where bowel action is obstinate and capricious, where it is desired to avoid the use of aperients, or where such medicines have failed to regulate the mechanism.

*Asparol* (Chem. Fabrik. J. E. Stroschein, Berlin) is stated to be calcium caffeine acetylsalicylate. Its use is indicated in cases where the administration of salicylic acid or acetylsalicylic acid and caffeine is likely to be beneficial. Its analgesic action is said to be prompt and lasting, and it is claimed that the presence of the calcium inhibits the action of the caffeine on the heart. It is also stated on medical authority that the drug is far better tolerated than acetylsalicylic acid and caffeine.

## New Inventions.

### THE HERMIT FOOT SUPPORT.

I HAVE tested recently a foot support for use in bed, and several of my patients speak very highly of it. Everyone knows how uneasy it is to take meals in bed, or to read or write, on account of the constant



tendency to slide down the bed. In the "Hermit" support the difficulty is solved, as the apparatus is adjustable to the length of the individual, whose feet can be kept in constant contact with it. As will be seen from the illustration, it consists of a framework capable of being extended in length and padded at one end as a support for the feet. By its use the whole tension is taken away from the bottom of the back, thereby relaxing the muscles there, and consequently giving a more comfortable position when sitting up in bed; it is of particular use where anyone has to be propped up in bed for heart trouble, chest complaints, and after operations. Mr. Herbert Mitchell, of Bradford, is the inventor.

Bradford. WILLIAM F. RAWSON, F.R.C.S. Edin.

# THE LANCET.

*LONDON: SATURDAY, JANUARY 3, 1925.*


## ALASTRIM OR "PARA-SMALL-POX"?

THE fact that the Registrar-General's returns for the year just passed have chronicled about 3000 notified cases of small-pox occurring at different times in nearly 100 English sanitary districts without entailing any appreciable mortality, taken with the evidence from many sources of the very slight character of the notified illness, lends a special interest to the review entitled Alastrim and Variola which appeared in the October number of the *Bulletin* of the Office International d'Hygiène Publique, and of which a translation was given in the last two issues of THE LANCET for 1924. This scholarly and practical study we owe to the distinguished epidemiologist and professor of hygiene at Lisbon, Dr. RICARDO JORGE. He has reviewed the epidemiology of the special type or variety of small-pox characterised by persistent benignity in different countries during recent years, describing its presence and characteristics in parts of Africa, Central America and the West Indies, in Brazil, in Australasia, and in Europe, as well as in a recent and instructive outbreak in the Azores. These epidemics are described under different names, such as alastrim, amaas, para-variola, and "mild small-pox." In all of them, Dr. JORGE points out, there are common characteristics so striking as to justify the conclusion that, however closely the epidemic disease is connected with or related to small-pox, it has qualities which, both for practical and scientific purposes, require to be differentiated from the variola or small-pox which is ordinarily understood and described in the text-books. In this contention Dr. JORGE is by no means oblivious of the fact that, from the time of SYDENHAM and from pre-vaccination days, classical small-pox has shown variations from epidemic to epidemic in its general severity, and that, occurring as it does in these days among populations which to a large extent are protected by vaccination, each epidemic comprises a series of cases of mild or abortive small-pox in which the modification has resulted from incomplete vaccinal protection. But, in regard to alastrim, amaas, or "mild small-pox," it would appear that the characteristic benignity is not a factor of immunity acquired by the individual as a result of previous small-pox or of vaccination, but is inherent in the type of the infection itself. The well vaccinated escape alastrim just as they escape small-pox; there is no dispute about the efficacy of the protection conferred. But, on the other hand, the unvaccinated, when attacked by alastrim, get through the disease, as a rule, with little more disturbance constitutionally than happens with chicken-pox or other infectious maladies which are usually considered of minor importance. Even when the rash is abundant and confluent in the early stages the patient hardly feels ill, and his eruption habitually dries up with little pustulation and rarely leaves scarring or pitting. No one who was familiar with small-pox as it occurred, for example, in London in 1893 and 1902, or as it occurred as recently as 1921 in Glasgow, can fail to realise the contrast between such a disease when unvaccinated children are concerned or older adults who have not been vaccinated since infancy.

Dr. JORGE has included a discussion of recent English "small-pox" in his survey, making use of the clinical accounts by GARROW, PAINTON, JAMESON, and others, as well as of the information supplied to the Office International d'Hygiène Publique by the British delegate, Sir GEORGE BUCHANAN. He finds in these accounts evidence which convinces him that the disease which we are now notifying and reporting as small-pox belongs to the class of alastrim epidemics in other parts of the world. Special attention is drawn to the parallel occurrences in Switzerland, where during the last three years the total reported cases have been 3900, the number of deaths only three, and the individual cases throughout have hardly ever merited the term severe. These observations, which accord with much that has been written and suggested in this country on the subject, notably by Dr. S. M. COPEMAN, are of practical as well as academic interest. The contrast which Dr. JORGE draws between the position in this matter of "unicists" and "dualists" is instructive and particularly worthy of study. As he points out, the uncompromising "unicist" is in a position of some difficulty in relation to the advocacy of vaccination on which he is accustomed to rely—namely, as an effective and necessary preventive of the severe or classic form of small-pox by which we may at any time be invaded. If vaccination is advocated as a protection against the severe type while we insist at the same time that the benign type should be diagnosed and notified as small-pox without any differentiation, the public receiving the propaganda is apt to become bewildered or mistrustful. On the one hand, it is asked to accept rigid systems of vaccination and hospital isolation, sometimes under legal compulsion, in order to ward off a terrible disease; on the other hand, the terrible disease, when it appears and comes to its doors, is no more alarming than chicken-pox, and has so far shown no signs of possessing a potential or inherent danger of being transmuted into the redoubtable form. The other side to the picture is that the prudent "dualist" admits that if he has to see an individual case, in its early stages, with no knowledge whatever of the epidemic of which it forms part, he cannot with any certainty diagnose it as alastrim and not small-pox, or vice versa. He is in the same position as with a case of enteric fever where he has no bacteriological aid to determine between typhoid and paratyphoid infection. Dr. JORGE reviews several points of possible differentiation, such as the character of the rash and immunity and allergic reactions, emphasising the need for further investigation and research in these directions, but without finding any absolute criterion as between variola and alastrim decisive for the individual case.

Looking to the question as a whole we believe that there will be a large measure of agreement with his main contention—namely, that for clarity of thought as well as for administrative convenience it has now become necessary to adopt a special term to designate the characteristically benign type of small-pox (in the generic sense) which is now extensively prevalent in different parts of the world. The term "mild small-pox" is not of itself sufficient, inasmuch as mild cases occur with every epidemic

of classical small-pox, and severe cases may occur, though rarely, in course of the benign epidemics. "Alastrim" has much to commend it historically and etymologically; it signifies merely a disease which is scattered, and it can be used without prejudice to any controversy. The alternative "para-small-pox" (or "para-variola") has advantages from the point of view of analogy, from its including a reference to the disease with which it is so closely akin, and because no new position would be created in the matter of notification. On these grounds, perhaps, it may be preferable to ignore the unpleasantly hybrid nature of the word "para-small-pox" and adopt it boldly for our working purposes. The decision here seems to rest with the Ministry of Health and those who determine official nomenclature in regard to infectious diseases.

## THE STIGMA OF NEUROSIS.

THE evolution of official terminology from "mad-house" through "lunatic asylum" to "mental hospital" shows that there is a great deal in names when they involve prejudice, and any change in nomenclature is justified that helps to remove the notion that the mental sufferer is a guilty encumbrance to be hidden away so that he cannot offend. But the expression of prejudice in names is still current in the sphere of those minor psychoses that rarely involve certification. "Shell-shock" was a respectable disability, whilst the alternative and correct diagnosis of hysteria was, and often still is, suppressed on account of the attached opprobrium. A patient may have a gastric or vaso-motor "neurosis," but he must not be "neurotic" on pain of social or family ostracism and, we fear, some degree of professional neglect. There is, indeed, a distinction between "neurotic" and "neurasthenic" which involves a subtle moral judgment. If we accept inquest reports as a basis of observation we find that the sufferer from neurasthenia often commits suicide whilst the neurotic never does; thus the latter may demonstrate, by suicide, his right to the more respectable diagnosis. The phrase "nervous breakdown," however, involves nothing blameworthy, and a recent lay writer describes under that title the mental trouble from which the elder PITT suffered, though the description makes clear that the condition was one of anxiety hysteria.

This medley of prejudice and pseudo-diagnosis is partly responsible for that astonishing amount of suffering and disability in the domain of the psychoneuroses to which Dr. EDWIN GOODALL referred in a recent issue of THE LANCET (Dec. 20th, 1924, p. 1275), and for which our Scottish correspondent in the present issue gives chapter and verse. The obloquy carried by such words as "hysterical" or "neurotic" is accompanied by a belief that the patient is to blame, that he need only use common sense and will-power to rid himself of his difficulties, and that neurotic suffering is best treated by "wise neglect." This belief will often be supported by the practitioner who has not followed the progress of psychopathology. It is regarded as a sad injustice when a patient with an organic disability is wrongly thought to be hysterical or neurotic, but, though an error in diagnosis is always regrettable, it is our peculiar attitude towards the neurotic that makes this particular mistake so distressing. Yet the denial of help to the mental sufferer is a greater injustice, and the patient who needs treatment for his mental state is often not even given the opportunity to describe the symptoms for which he would welcome relief.

This same medley is allowed to form the equipment with which many a practitioner, even after holding hospital appointments, sets out to handle the problem of the psycho-neuroses in general practice. Systematic instruction in psychopathology hardly exists, though its foundations are now well established, and that it receives little attention in the general curriculum is suggested by the fact that the candidate for a qualifying examination would never expect to be questioned, say, upon that common clinical phenomenon connoted by the phrase "a nervous breakdown." In fact, his hospital training teaches him that all clinical interest ceases when once a diagnosis of neurosis is established. Certainly the neurotic patient seems to have a legitimate grievance, but it is one that bids fair to be removed or alleviated. More instruction is being given to-day in our medical schools along the indicated lines, as the teachers themselves are becoming more impressed with its necessity. And here we have a direction in which medical training can be improved practically without additions to a crowded curriculum.

## QUININE IN MALARIA.

ALTHOUGH the discovery of the cause of a disease is rightly regarded as a necessary preliminary to the establishment of rational as opposed to empirical treatment, it often happens that many years of patient study are needed before the full practical results of the discovery come to fruition. Thus the causal organism of pulmonary tuberculosis was identified in 1882, and after the lapse of 40 years we remain baffled in our attempts to formulate a direct method of attack, based on our knowledge of the cause of the disease. Again, the virtue of cinchona bark as an empirical remedy for malaria was known and utilised more than 200 years before the malarial parasite was first seen and described by LAVERAN in 1880. Since that date a vast amount of research work has been done, much of it recent and inspired by the experiences of the war; yet we remain in ignorance as to the precise manner in which the good effects of quinine are brought about, nor is there any approach to unanimity as to the dosage, method of administration, or even the preparation of quinine or other cinchonal alkaloid from which the best results may be expected. The careful and closely reasoned criticism of the methods of treatment of the malarias by Lieut.-Colonel CLAYTON LANE, which appears in the *Tropical Diseases Bulletin*,[1] is on this account particularly opportune, and merits the close attention of all who are interested in malaria. Among many points of importance a few may be selected as of special interest. There is experimental evidence to show that, within a few minutes of the injection of a solution of quinine into the blood-vessels of a rabbit, 90 per cent. of the amount injected has disappeared from the blood. Of this a moiety, variously estimated as 15–65 per cent., is excreted in the urine; the remainder is stored in the organs of the body, more particularly the kidneys, spleen, and adrenals, where in course of time it is broken down or "metabolised" into substances of unknown nature. The rapid disappearance of quinine from the blood makes it difficult to believe that its virtue lies in any direct poisonous effect on the plasmodia, and it must be presumed that its action depends on the production,

[1] 1924, vol. xxi., No. 11.

directly or indirectly, of bodies of unknown nature, which combine with the malarial organism and destroy it.

Of the numerous observations undertaken with the object of determining the line of treatment most likely to be successful in eradicating the parasites from victims of relapsing malaria, Colonel LANE singles out for special notice two sets of experiments, the Macedonian cases recorded by A. G. ANDERSON, and the Liverpool series by J. W. W. STEPHENS. In each series the conclusion has independently been reached that the efficacy of quinine in the prevention of relapse varies according to the time of year, the period of greatest efficiency coinciding with the warmer months. In assessing the relative value of different methods it is clearly of the greatest importance to recognise and make allowance for this underlying seasonal influence, and the failure to do so must be regarded as vitiating the results arrived at in much of the experimental work on the subject. No proof appears to be forthcoming of the widely held view that quinine is effective mainly or exclusively against extracorpuscular organisms. On the contrary, there is evidence that plasmodia are vulnerable to the influence of quinine in all but the terminal phase of intracorpuscular growth. It is concluded that the practice of timing the administration of quinine so as to correspond with a special phase of the life-cycle of the organism is not supported by scientific evidence. In discussing the much debated subject of intramuscular quinine stress is rightly laid on the experimental work bearing on the unfortunate sequelæ that may follow the injudicious use of the intramuscular route. On the other hand, while oral administration suffices for all ordinary purposes, it must be recognised that there are cases in which, for one reason or another, quinine requirements cannot be fully met by the oral method, and in these cases we believe that the value of the alternative route, as a temporary means of supplementing or replacing oral quinine, has been amply demonstrated. The clinical experience of the war, in which the aggregate number of intramuscular injections was very large, shows that, provided due care is taken to prevent sepsis and to avoid injury to nerve trunks, the risk of serious local complications involving permanent disability is very small indeed. Perhaps the only circumstance in which the intramuscular method should be absolutely prohibited is the concurrence of a debilitating condition, such as chronic dysentery, with malaria; in such cases intramuscular injections of quinine are likely to cause widespread necrosis of muscle and abscess formation, and therefore should not be prescribed. The review concludes with a short account of recent work on the comparative values of quinine and other alkaloids derived from cinchona, such as cinchonine, cinchonidine, and quinidine, in the course of which a considerable discrepancy of evidence is disclosed, and it is clear that the subject is one on which further research may profitably be undertaken.

The problem of the treatment of malaria presents peculiar intricacies. When it is remembered that there are three forms of malaria, differing not only in biological and clinical characters, but also in their therapeutic reactions; that there are a number of cinchonal alkaloids, mostly of proved value, but of which the relative efficacy awaits exact determination; and further, that there exists a seasonal factor which directly influences the results obtained by treatment, the difficulties of a scientific investigation in which so many variables have to be taken into account are readily realised.

## AN OLD HIGHLAND FARM.[1]

To have compiled a book which is not only interesting but eminently readable out of an ill-kept, incomplete, and what would now be called illiterate account book is a literary feat of which Miss Grant may well be proud. She has produced a lifelike picture of Highland rural life at a date when what was practically mediæval feudalism as it existed in England, say, in the fourteenth century, was still in being. William Mackintosh, of Balnespick, whose account book between 1768 and 1782 is the foundation of Miss Grant's work, was born sometime before the year 1745, being infeft —i.e., enfeoffed—into Balnespick in 1743, which estate he sold to Macpherson of Invereshie in 1748. At the date of his account book he held a tack—i.e., lease—for "Three nineteen years" from the Chief of Mackintosh of the Davoch of Dunachton and Kincraig in the parish of Alvie on the upper reaches of the Spey. The position of the tacksman was as follows. Of the land which he held from his chief he kept a portion in his own hands; the rest he leased to subtenants who farmed it on a sort of coöperative system on the same principle as village communities in mediæval England (v. Chap. VII.). As Dr. Scott points out in his preface, "it appears that the rents due from his subtenants nominally covered the chief rent he paid. That left him the produce of the portion of land he reserved for himself for his own maintenance." But "he was not dependent on the produce of the lands of Dunachton for his own living, since he had other sources of income." In a case where the tacksman had not the latter resources, continues Dr. Scott, there might have been some danger that the subtenants would have suffered. Anyway, they did not suffer under Balnespick's rule, for we find him acting as a beneficent landlord. He received and administered the pay of a man who was with the army, and despite the fact that the man was in debt to Balnespick the whole of the money transmitted in this way was spent on the man's family and the debt was not claimed until after his return. Balnespick also arranged marriage settlements, administered the affairs of widows and orphans, acted as a sort of bank, provided credit for the tenants, and formed an arbitrator in grazing disputes and the like. In fact, he carried out the feudal system at its best, a system which only fell because those who worked it would not remember that although those below them had duties to carry out, yet they themselves also had responsibilities to their inferiors. He was responsible for the distribution of such poor relief as there was, for the collecting of the minister's stipend and the schoolmaster's salary. What strikes a modern reader is the hardness of the farming life and how both the people and their animals were generally very near to starvation. The plough was as primitive as that described in the Georgics, and yet so small and weak were the cattle that it took a 12 ox team to draw it. Yet with all this they were a hardy and happy race, and no one who has studied the history of the British Empire will fail to remember what a debt that Empire owes to such men and their descendants.

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THE University of Sydney is about to appoint its first professor of obstetrics, a new chair having been founded with the aid of a grant made by the New South Wales Government. This appointment will increase to eight the number of professors in the medical faculty, which includes one-third of all the students at the University. Applications for the chair are now being invited in this country as well as in Australasia, and should reach the Agent-General for New South Wales at Australia House not later than Saturday, Jan. 24th. A committee sitting in London will investigate the claims of candidates for this chair.

[1] Every Day Life on an Old Highland Farm. By L. F. Grant. With a Preface by W. R. Scott, M.A., Phil.D., Adam Smith Professor of Political Economy in Glasgow University. London: Longmans, Green and Co. 1924. Pp. 276. 12s. 6d.

# Annotations.

"Ne quid nimis."

## ACCIDENT BEDS IN LONDON.

THE appeal of the Metropolitan Hospital at Christmas for a large building fund was based partly on the fact that accidents have become so frequent in the neighbourhood as to render necessary a new casualty ward. In his speech at the meeting of the General Council of King Edward's Hospital Fund for London, which we reported last week, the Prince of Wales pointed out that one of the most important subjects dealt with recently by the Fund is the increased provision of accident beds. The hospital accommodation of the capital will presently be increased by 301 beds, of which 53 are to be reserved for accidents, several of the new grants in aid of schemes of capital expenditure being made conditionally upon a specified number of beds being set aside for emergencies. This welcome and long overdue expansion is the outcome of a recommendation made in March last by the Ambulance Cases Disposal Committee of the Fund, and to it must be added the 16 further accident beds which have already been made available at King's College Hospital. In themselves these are substantial additions to the means of dealing with cases of accident and sudden illness, but they are still far from being adequate to the constantly growing need. Guy's has 57 beds definitely attributed to casualties and accidents; St. George's, 38; St. Thomas's, 23; but in most cases the numbers are inconsiderable, while the smaller general hospitals and cottage hospitals have, at the best, only one or two, and in most cases none at all.

If street accidents only had to be provided for this provision would still be inadequate, especially in view of the disquieting fact that these accidents are steadily increasing. Whereas in 1907 17,065 cases of personal injury were reported by the police, 283 of which were fatal, in 1922 25,547 persons were injured and 675 killed. To these high figures must, however, be added cases of sudden illness, necessitating removal to hospitals or infirmaries; in 1922 there were just under 8000 such cases. There has been no comparable addition to casualty beds—indeed, during the last three or four years the provision had remained practically stationary until the King's Fund fortunately found itself in a position to take action. Notwithstanding the "Safety First" propaganda, which has done much to remind both pedestrians and drivers of vehicles that they are always responsible for their own lives, and often for those of others, accidents in the streets of London are unlikely to diminish. Carelessness, ignorance of the presence of danger, absence of mind, sudden loss of nerve, are contributory causes which will continue to exist so long as the human mechanism falls short of perfect action. Roadways and footpaths become more crowded every year, and thoroughfares that were comparatively peaceful a decade ago are now ceaselessly thronged. It is thus of real importance not only that there should be a sufficiency of casualty accommodation in the hospitals, but that it should be so distributed that it may not be necessary to convey seriously injured victims or persons seized with grave illness long distances through the overcrowded streets.

Rapidly as the voluntary hospitals have, generally speaking, recovered from the pecuniary shocks of the war and of the years immediately following it, they still have before them tasks, notably of extension and rebuilding, which will place a heavy tax upon their resources and upon the generosity of those who provide them. The fruition of those tasks will enable many of them to provide more adequately for emergency cases, but, more often than not, fruition will be delayed for years, and the need is immediate and increasing. An important contribution to the solution of the difficulty would be afforded by such a relaxation of law and regulation as would enable wider use to be made of the vacant beds which are so often to be found in Poor-law institutions. Questions, for instance, involving anything in the nature of what used to be called "Settlement," should be ruled out—injured persons should be entitled to be admitted to such institutions without formalities or inquiry into their place of abode and allowed to remain there until they can be removed without prejudice to their condition. Most important of all is that they should no longer be technically "pauperised" by remaining for a short time under the care of the guardians. The "pauper taint" in such cases is a relic of barbarism, and to sweep it away would enable the Poor-law infirmaries to give powerful help to the overburdened voluntary hospitals, not merely in this, but in many other directions, as well as giving the more backward of them an incentive to improve their scientific and nursing equipment

## MYOPIA, A DISORDER OF GROWTH.

THE cause of that over-distension of the sclerotic coat of the eye in its posterior half which results in myopia is a perennial subject for discussion among ophthalmologists. It is generally taught that the main factor in its causation is an intermittent increase of intra-ocular tension during the period of growth, due either to the pressure of the extra-ocular muscles on the eyeball during convergence, especially in the stooping position, or to vascular engorgement due to the too constant use of the eyes for near work. Dr. F. W. Edridge-Green holds, and has recently enforced his argument in our correspondence columns, that the main factor in the causation is the increase of blood pressure which is attendant on the performance of any undue muscular effort. A lecture recently delivered to the British Optical Association by Sir Arthur Keith takes us back to fundamental consideration of anatomy and physiology in a way which those who are accustomed to confine their thinking to the bony limits of the orbit cannot but find both refreshing and helpful.

Starting from the premise, which will be generally admitted, that it is exceedingly rare for an eyeball which has remained normal until the twentieth year then to commence to elongate, Sir Arthur Keith lays it down that myopia should be ranked amongst the disorders of growth. Now the eye shares with the brain the peculiarity that there is in both, during the early years of life, a precocious growth. "By the end of the fourth year the brain has grown to 84 per cent. of its full size, the eye to about 78 per cent., while at this age a child's body attains only 21 per cent. of its adult size." After the fourth year growth, both of eye and brain, proceeds slowly and steadily, the adult dimensions being reached about the twentieth year. The brain is enclosed within a strong fibrous capsule in which are developed the cranial bones. How does the growing brain succeed in making its bony capsule grow in the required shape? Just how the activity of the osteoblasts is regulated is a problem that Sir Arthur Keith says he has not yet fathomed, but he is sure that in the gradual expansion of the outer coat of the eyeball we have an exactly similar problem. To realise the complexities of the problem he proposes to take the model of an artificial baby-eye, making the outside coat of a tough material woven out of an inelastic fibre like the outer cover of a pneumatic tyre. If we copy Nature, he says, we shall build the outer coat in such a way that it will withstand pressures and tensions ten times above that to which an eye is normally exposed. To do this it will be necessary to arrange the fibre-strands meridionally, equatorially, and diagonally in all directions, and also so that they pass from each layer to the next to bind them securely together. Having thus set up a baby-eye, and distended it with pressure equal to that which supports a column of mercury 25 mm. high, how are we to

bring about in it a gradual and regulated enlargement or growth?

This is the problem that has to be solved in the living eye, whose outer coat is formed in just such a fashion as has been indicated. We know that in every microscopic mesh of the fibre system there is a resident living unit. It is these fibroblasts that can bring about the required processes of growth and absorption and control the whole process by which the eyeball is shaped so as to withstand the internal pressure to which the eyeball is subjected. How the fibroblasts do their work we do not know. We may suppose that during the period of growth they are sensitive to the strains and stress imparted to their fibres by the intra-ocular pressure. But after youth has passed something happens and they are no longer sensitive; the process of growth ceases. To illustrate the sort of factors that influence the activity of the fibroblasts Sir Arthur Keith refers to the subject of acromegaly, a disease in which the mechanism which formally regulates the activity of cells or units which build fibrous tissue and bone is entirely thrown out of gear by some defect in the secretion of the pituitary body. Some comparable fault in the mechanism which normally regulates the growth of the sclerotic coat of the eye must be at the root of myopia. Neither excessive convergence, nor vascular engorgement, nor unusual muscular effort are in themselves adequate causes to originate myopia, though when once started all these may be adverse factors favouring its increase, a fact which justifies the advice usually given to myopes by the ophthalmic surgeon. Nor is it any real help to regard myopia as an adaptive action of Nature in an effort to bring the eyes of the moderns more into harmony with the requirements of civilisation. On the contrary, myopia is a defect due to a faulty action on the part of the fibroblasts which form the outer coating of the eye. What exactly causes that defective action is a problem as yet unsolved. Sir Arthur Keith has pointed out the direction in which we must look in order to solve it.

## SANOCRYSIN IN TUBERCULOSIS.

Prof. H. Mollgaard, of the physiological department of the Veterinary College in Copenhagen, has recently introduced a new compound for the treatment of pulmonary tuberculosis. The substance is a double thiosulphate of gold and sodium, and has been named sanocrysin. It is used clinically in conjunction with a serum, the most valuable source of which has proved to be horses which have received injections of Dreyer's diaplyte tubercle bacilli. The steps which led to the combination of gold salt and serum were briefly these. Sodium gold thiosulphate was found to be a substance well tolerated by healthy animals such as rabbits or calves, in doses up to about 60 mg. per kilo. body-weight; the first serious symptom it produced was albuminuria, and the occurrence of this was avoided if injections were made of doses slowly increasing in size. A different picture was presented if doses of about 30 mg. per kilo. were injected into tuberculous animals; signs of severe shock appeared, notably fall of body temperature, serious albuminuria, and collapse; the animals suffered in a fashion closely resembling that seen after the injection of tuberculin. Prof. Mollgaard arrived at the conclusion that in sodium gold thiosulphate he had an agent which produced in the body (as well as out of it) powerful lysis of tubercle bacilli, and that in order to make it of clinical value he had only to find a serum which was able to neutralise the effect of the toxins liberated when the bacilli themselves were lysed. He found serum prepared by the use of diaplyte bacilli the best for this purpose, and he succeeded in demonstrating a striking action of such serum in reducing the shock produced by the injection of the gold salt; the effect on the albuminuria was convincing. The practical outcome of Prof. Mollgaard's research has been to enable him to cure calves suffering from advanced pulmonary tuberculosis produced by the injection of cultures of high virulence; the number of experiments made is sufficiently large to establish the therapeutic value of sanocrysin under these conditions. An extensive clinical trial has already been made in Denmark on about 450 cases. Dr. Secher has examined over 160 cases and has had a large number of striking successes in severe phthisis; it is at present not known which is the most favourable type of patient, but there is some indication that the acute though massively infected subject offers more hope than the long-standing chronic one. Dr. Secher is of opinion that the treatment will be of great value in ensuring the future health of cases of tuberculous pleurisy. Investigation in Denmark has shown that a very high percentage of such cases die within three or four years after leaving hospital. The further development of sanocrysin will be awaited with much interest. The *Northern News Service* reports the equipment of a factory in Copenhagen capable of dealing with 100 kilos. of metallic gold monthly.

## SPECIMENS ILLUSTRATING SURGICAL METHODS OF EXPOSURE.

THE nucleus of a collection of anatomical specimens illustrating surgical methods of exposure has been prepared with considerable care by Mr. A. K. Henry and Dr. D. K. Milne Henry, and was shown by them on Dec. 12th last at a meeting of the Surgical Section of the Royal Academy of Medicine in Ireland. In the specimens demonstrated the various structures were appropriately coloured and labelled, and each specimen was accompanied by a legend which explained lines of incision, landmarks, and planes of cleavage by means of simple diagrams. This collection, through the courtesy of Prof. E. J. Evatt, was begun at the Royal College of Surgeons, Dublin, with the double purpose of helping students of operative surgery, and of creating what it is hoped may become something analogous to a library of reference for the practising surgeon. It was felt that the earlier the student is made to look to the disposition of parts as a thing upon which his own personal intervention might be acquired the better. Students learn and remember their anatomy with the skin off, and are often at a loss when a portion of a familiar dissection is screened off from the rest like a field of operation. It is easy to hang the anatomy of a whole region down to the minutest detail upon a surgical peg, and to demonstrate it by means of a surgical exposure. Again, actual preparations which can be studied at leisure may well give the surgeon information regarding the detail and depth of an exposure in a way that no picture could imitate. It is obvious that no amount of anatomical knowledge can replace the study of live pathology upon the operating table, but a clear appreciation of normal anatomy in the presence of pathological change is essential to good surgical work. Among the preparations shown at the meeting were: Exposure of the popliteal face of the femur from the outer and inner side, the Sprengel Smith-Peterson exposure of the hip-joint, and Royle's exposure of the lumbar sympathetic for rami-section in spastic paraplegia.

## PUNCTATE BASOPHILIA.

AMONGST the many deleterious effects produced upon the body by chronic lead absorption, it has long been recognised that a moderate degree of secondary anæmia is a very constant one. The drop in the red-cell count is not generally great, the count being, as a rule, between 3–4,000,000 per c.mm.; but, as is usual in secondary anæmias, there is a more severe effect produced upon the hæmoglobin content of the red cell and consequently the colour-index is low. Stained films show the presence of changes in size, shape, and tinctorial characters of the red cells; perhaps the most discussed and interesting of which is the presence of basophilic stippling which usually goes by the name of punctate basophilia. This condition, one of peppering with blue granules of

the erythrocytes whose ground colour is red when stained by the Romanowsky methods, is one of long recognition, having been described by Ehrlich in 1883, and it has been the subject of much research and debate both as to its origin and to its significance. It was early recognised not to be specific for any form of blood lesion, but to be found in a number of other conditions; it is present in the blood in embryonic as well as in early extra-uterine life, and it was noted by a number of observers as a frequent accompaniment of trench fever in the late war. Especial attention has been directed towards its presence in saturnism, in which it is frequently a well-marked feature of the anæmia. It may also be produced experimentally by lead, as well as by other toxic agents.

The nature of the condition has been widely discussed, its association with conditions of blood destruction and regeneration being generally admitted. One school held that it represented persisting fragments of nuclear chromatin, the residue of fragmented erythroblast nuclei, this being in conformity with the now generally rejected theory of fragmentation and disappearance of the normoblast nucleus. The second, and more modern school, considers it representative of a fœtal stage in the development of the red cell in which the cytoplasm is largely basophilic, prior to the development of hæmoglobin. From this point of view the blue-stained granules would be persisting particles of a cellular structure, normal in the early development of the red cell, but absorbed and removed in its maturity. Their persistence indicates the production of imperfectly finished red cells by the bone marrow, a condition which in another slightly differing form is probably exemplified by polychromatophilia—a diffuse and abnormal bluing of Romanowsky-stained red cells. Such an output of imperfect cells might result from a marrow which is stimulated to increased production by the presence of an anæmia, and, at the same time, functions under the disabling effect of the presence of the anæmia-producing agent in the circulating blood and amongst its erythroblastic cells.

In a recent review of the specific effects of lead upon the blood cells, published in *Medical Science*,[1] the question of the mechanism by which lead produces these changes in the blood has been summarised from a series of papers published by Aub, Reznikoff, and Smith in the *Journal of Experimental Medicine*, this view of the nature of punctate basophilia, which is associated with the names of both Pappenheimer and Sabrazès, is accepted. An attempt is further made to analyse the direct effect of lead upon the red cells in the production of anæmia and, as the result of a long series of in vitro experiments, the somewhat mechanistic suggestion is put forward that insoluble lead phosphate is precipitated in the envelope of certain of the cells, which thereby renders these harder and brittler than the normal ones, with the result that they are rapidly battered to bits in the circulatory torrent; a theory whose simplicity appears to be its main attraction.

## THE SUDAN SCHOOL OF MEDICINE.

THE twenty-second annual report of the Gordon Memorial College, Khartoum, contains an account of the opening of the Kitchener Memorial School of Medicine. It was one of the late Lord Kitchener's cherished projects that in addition to the College, in memory of Charles George Gordon, which he was so largely instrumental in establishing, the Sudan should also have its own school of medicine. On Feb. 29th, 1924, the new buildings of the medical school were officially opened by Major-General Sir Lee Stack, whose tragic death adds a third to the memories of great men associated with the Sudan. The cost of the new school was met partly by the generosity of private subscribers and partly by a munificent gift from the funds of the British Red Cross in Egypt, while an endowment fund is already well on its way towards reaching the amount necessary to provide for the upkeep of the new medical school. The late Governor-General of the Sudan, who was also President of the Gordon College, made a significant statement in the course of his address at the opening ceremony when he said, "I am convinced that medical work is of the highest importance to administration." Such was also Kitchener's belief, and it is gratifying that six students from the Gordon College are amongst those who have commenced their studies at the new school under the direction of Dr. Oliver Atkey, Director of the Sudan Medical Department. The Gordon College continues to do useful work in the educational field, and from the medical point of view particular interest attaches to the work of the Wellcome Tropical Research Laboratories. Major R. G. Archibald, the director of these laboratories, contributes a brief report on the work which has been carried out. He himself was responsible for an important survey of the bilharzial problem, as a result of which bilharzia is now a notifiable disease, and measures for checking the spread of the malady have been established. The chemical section has carried out work on the chemical problems of cotton-growing, and the entomological section has continued its study of the various agricultural pests of the country. The Gordon Memorial College has lost much in Sir Lee Stack, for his sterling administrative qualities were of the greatest value in its varied activities, and he was particularly interested in the medical school.

## TUBERCULOSIS OF THE KIDNEY.

A TUBERCULOUS infection which settles in the kidney is one of extreme gravity. Some authorities of weight, after prolonged investigation and research, have declared that the disease is never recovered from spontaneously. This is the accepted view of urologists, and the exceptions are of such rarity of occurrence that effective treatment can only be based upon the assumption that it is invariably true. There are some patients who, whilst incapable of eradicating the disease completely, yet localise the infection; the kidney is destroyed and replaced by a fibro-lipomatous mass containing encapsuled and inactive foci of bacilli, so that to all intents and purposes a nephrectomy has been performed. Such people may live to the end of their lives without any further sign of urinary tuberculosis appearing. Tuberculin therapy has been thought to contribute to this happy result, but success occurs too seldom for vaccine therapy to be considered preferable to surgery except under unusual circumstances.

As a rule, the diagnosis of unilateral renal tuberculosis demands nephrectomy without undue delay. It is therefore essential that diagnosis should take place early in the course of the disease and be capable of establishment beyond doubt. The discovery of tubercle bacilli in the urine alone may not be sufficient evidence, for Lüdhe and Kielleuthner were able to prove the excretion of bacilli by the uninfected kidneys of phthisical patients. H. Wildbolz maintains that in such cases the bacilli are so few in number that they are demonstrable only by guinea-pig injections, never by direct film examination. An essential finding in the urine is pus, or perhaps, in the earliest stages, endothelial or renal epithelial cells. "Aseptic" pyuria is characteristic of a tuberculous kidney. On the other hand, the collection of urine containing pus and tubercle bacilli from a kidney by means of the ureteric catheter does not always mean an infection of that kidney, for there may be an ascending ureteritis which has not reached the kidney, spreading across the bladder from the opposite ureter. This ureteritis, like secondary tuberculous cystitis, shows a tendency to spontaneous cure when the primarily diseased kidney has been removed. It therefore happens that some continental authorities do not lay stress upon ureteric catheterisation, and for the demonstration of the condition of the supposed healthy kidney consider it to be attended by danger and therefore contra-indicated; for a small abrasion of the ureteric mucosa

[1] The Effect of Lead on Red Blood Cells, Medical Science, vol. xi., No. 1, October, 1924.

caused by the catheter may allow of the implantation of bacilli, and so lead to the ascending infection referred to by Mr. C. A. R. Nitch in this issue of THE LANCET, an unfortunate result which may not become evident until some months after the cystoscopic intervention. These surgeons are inclined to pay great attention to the delay in the excretion of indigo-carmine as an index of disease of the kidney, and prefer to avoid altogether ureteral catheterisation.

The outlook after nephrectomy has been fairly well established by numbers of observers. About 60 per cent. of patients are cured. These results are improved somewhat, as Mr. Nitch has demonstrated, if the whole ureter is removed at the primary operation, whilst the mortality of the procedure is not increased thereby. Precautions should be taken not to infect the operation wound from the cut surface of the ureteral stump, and as much as possible of the perinephric tissues should be removed as they often harbour tubercle bacilli. The kidney should never be incised to verify a diagnosis, which can be made more certainly by previous investigations. Of recent years attention has been given to the possibility of affording relief by surgery to patients suffering from bilateral disease. Whether the more affected kidney should be removed or not is a question still sub judice. Eugen Joseph [1] recommends removal in bilateral cases of a closed pyonephrosis when the other kidney, by chromoscopy, appears to be only slightly injured, and he quotes one patient as living in health seven years later. Wildbolz [2] thinks intervention in bilateral disease is very seldom indicated, for the relief from pain and frequency afforded by the operation is only of short duration, the patient soon suffering as much as before. E. S. Judd and A. J. Scholl [3] give the results in 18 bilateral cases; four died of uræmia after the operation and ten died during the succeeding 18 months. The results of operation upon bilateral cases should be scrutinised critically to be certain that the patients actually suffered from disease on both sides. Braasch, in 7 of 22 apparently bilateral cases, was able to prove by animal inoculation that bacilli were coming from the healthy side, and considered that such kidneys were infected. But, as we have seen, this may not be evidence of actual disease of the kidney, and the inclusion of such cases in statistics of bilateral cases may lead to error.

## THE ODYSSEY OF FAT IN THE BODY.

THE importance of fatty foods and the rôle played by fat in the human and animal organism justifies the extent and variety of the researches into its absorption and assimilation. Apart from its great value as a source of energy arising from its oxidation into carbon dioxide and water, the amount and uses of the water so produced—the water so produced being greater in amount than the fat itself—has for some, and perhaps for all animals, a profound significance. The uses of this "metabolic water," as it is called by Dr. S. M. Babock, are especially evident in hibernating animals and in those like the camel living for long periods in nearly waterless regions. Fat occupies a unique position amongst the food materials in the blood, for all except the fats are in solution; the major part of the fat, as soon as it passes through the wall of the intestine, appears in the lacteal vessels as a very fine emulsion—which has been termed the molecular basis of the chyle. The particles of this emulsion—the chylomicrons of S. H. Gage [4]—are mostly from $\frac{1}{4}\mu$ to $1\mu$ in diameter and can be seen with great clearness and certainty by the dark-field microscope and can in that way be followed in the lacteals to the thoracic duct; and finally into the blood-stream and in the blood throughout the entire body. By the use of two non-poisonous red dyes—Sudan III. and scarlet red—which stain fat and which cling to its fatty acids through all the digestive changes, we have been enabled to follow the odyssey of fat in the body—to trace its rebuilding when absorbed, and to chart its entire journey until finally the pink colour indicates where the fat is laid down in the body during the process of assimilation. The pink colour of the emulsion is visible in the lacteals, in the serum of the blood as well as in the fat reservoirs, and shows exactly where the fat is stored.

Experiments were made by Dr. Gage and Dr. Fish on healthy students who volunteered, as well as on cats, dogs, fowls, and rats. Healthy men and animals were fed with fat coloured red and mixed with carbohydrate food and in many cases protein was added, and every hour a drop of blood was taken and examined by the dark-field microscope during the digestive cycle. Neither protein nor carbohydrates, nor any combination of them give rise to fine particles in the blood. Fatty food is the only kind of food that gives rise to the emulsion of these fine particles in the chyle and blood. That the particles were fatty was determined by specific tests. The time after eating fatty food for the particles to appear in the blood is from one-half to one and a half hours. The time required for a given kind and quantity of fat to be digested, absorbed, and to disappear from the blood in any given individual or animal varies from about six to ten hours, but mental conditions were found to influence digestion. Whenever fat is present in any proportion, as in an ordinary meal, the blood of the man or animal shows a gradually increasing number of the fine particles for the first three to four hours, and a decline similar to the increase for the next few hours, till in eight to ten hours the blood is again practically free from the particles. Under normal conditions there is no increase of fat particles in the blood unless fat is taken with the food. The digestability of castor oil was tested. After fasting from 12 to 20 hours 20 g. of castor oil were used with bread or potato, and a mineral oil (nujol) was similarly used. In both cases there was no increase in the chylomicrons, and it was concluded that there was no digestion of either substance. There was no purgative action until after the usual period for the digestion of fatty food. If a mineral oil is mixed with butter and eaten the butter-fat is picked out, digested and absorbed, and the mineral oil left behind. It takes a markedly longer time to digest and absorb fatty acids than ordinary fats. In a well-nourished man, after prolonged fasting, the remobilised fat appears in the blood as an emulsion of fine particles, comparable with those following the digestion of fat. It would seem that fat passes into the blood from the fat reservoirs as it is needed and at the rate it is needed. The dyes used attach themselves to the fatty acid part of the fat and not at all to the glycerol. As showing the persistence with which the dye clings to and remains with the fatty-acid radical after quitting the living animal, is the fact that if the eggs with red fat in the yolk are hatched, the chicks will utilise it and lay it down as pink fat in their reservoirs, and young mammals sucking the pink milk of mothers fed with red fat will digest the same and lay it down in their bodies as pink fat. In man the average time of a digestive cycle for fat is from seven to nine hours for 20 g. of butter.

This staining method can be used for studying the source of the fatty constituent of milk. Milk-fat in different groups of animals may be derived from different sources. In the cow and other almost purely herbivorous animals it is supplied most largely by the carbohydrates and proteins of the food. It is certainly only in a small degree due to the fat in the food. With carnivorous and omnivorous animals in which fat forms a relatively important place in the natural diet, the milk-fat is derived largely from the fat in the food—i.e., the fatty-acid radicals eaten with the food go to make up the milk-fat. By feeding rats and cats with Sudan-stained fat, pink milk was obtained, but on feeding cows with an abundance of the Sudan dye in the regular feeds, no pink cream was ever obtained from the samples of milk taken at every milking. Moreover, if laying hens are fed with Sudan dye

[1] Kystoscopische Technik, Berlin, 1923.
[2] Lehrbuch der Urologie. Berlin, 1924.
[3] Ann. of Surg., 1924, lxxix., 395.
[4] S. H. Gage and P. A. Fish: Amer. Jour. of Anatomy, September, 1924, v., 34.

in their food, the fat laid down in the yolk will be red, and if several feedings are given and the eggs boiled and cut across, there will be as many rings of the red yolk as there were feedings. In the domestic fowl the yolk contains about one-third of its weight of fat, and this fat is derived largely from the fat in the food. By the use of coloured fat as a label in the yolk one can tell exactly how long it requires for one of the smallest yellow yolks to reach full size, break from the ovary, enter the oviduct, and have added to its outside the white, the shell membranes, the shell, and be laid. For a hen laying every day it requires from seven to eight days. The stained fat in the yolk does not diffuse its stains into the neighbouring uncoloured fat particles. If hens' eggs with pink yolk are hatched the developing chicks, in utilising the fats, lay down pink fat in their fat reservoirs. If a mammal like a rat, while nursing its young, is given red fat with its food, the young rats fed on the pink milk will lay down pink fat in their adipose tissue. The main absorption of fat from the intestine is from the middle part of the small intestine—i.e., from the jejunum and the first part of the ileum. In rats, cats, and dogs fed on pink fat, pink-coloured fat begins to be laid down first in the peri-renal fat and in the omentum and mesentery; it appears lost in the popliteal, the orbital, and the epidural fat masses. In half-grown rats known to have a good supply of red fat in their adipose tissue and fed on a fat-free diet, it took about 20 days for the pink fat to disappear. This method makes it possible to determine whether a given fat or oil is at all digested and absorbed and to what extent; and in diseased conditions the dark-field microscope demonstrates with great certainty whether fatty food is digested, absorbed, and assimilated.

## THE REBUILDING OF MIDDLESEX HOSPITAL.

AT its last meeting the Court of Governors of the Middlesex Hospital was called upon to consider an important communication from its Chairman, Prince Arthur of Connaught, who left England on a visit to India a few days before the meeting was held. For some time past it has been evident that certain portions of the old buildings were far from satisfactory, and as a result of an exhaustive survey conducted by the hospital architect in consultation with the then President of the R.I.B.A. and the district surveyor, two wards were closed. A complete examination of the whole of the old hospital buildings disclosed evidence that the fabric would have to be reconstructed at a cost of at least £60,000, and the question at once arose whether it would be justifiable to spend such a large sum on what at the best could only be the postponing of the rebuilding of the old hospital fabric, which had already stood for over 150 years, was not well adapted to modern requirements, and was so planned as to impede future development. The board decided to adopt a rebuilding scheme involving an expenditure of at least £500,000. Steps have been taken to ensure continuity, and the old Sick Asylum in Cleveland-street is being reconditioned as an annexe, where patients, displaced from the old buildings, will be accommodated. Meantime the wards in the old hospital structure have been rendered safe with timber strutting. The cancer charity, medical school, and research departments are in no way affected by the scheme, and during the transitional period, treatment, medical education, and research work will be carried on exactly as now.

## THE DANGERS OF THYROID MEDICATION FOR THE OBESE.

RECENT research has taught us that obesity may depend on many different factors. It may be the outward and visible sign of the vices of sloth and gluttony, and as such it is apt to excite ridicule without pity. But it may also be the expression of a morbid condition, acquired or hereditary, over which the patient has no control; he cannot choose his diseases any more than he can choose his parents. The causes, therefore, of obesity being varied, it behoves us to elucidate them in each case before we prescribe treatment. It is, perhaps, unfortunate as well as fortunate that we possess in thyroid extracts the means of reducing weight in most cases of obesity, whatever the cause. A panacea may be a very dangerous thing. This is the lesson which Dr. E. Mosler, of the Third Medical Clinic of the University of Berlin, drives home with some vigorous plain speaking in the *Deutsche medizinische Wochenschrift* for Dec. 12th. He writes with the exasperation of the physician who, having treated a number of patients carefully for many years, sees them go to some fashionable institution for the treatment of constitutional diseases, whence they return with slender figures and the well-defined clinical picture of thyroid intoxication. Dr. Mosler gives an account of six cases, observed during the last few months, in which the administration of thyroid extracts, given by the mouth or by injection, did great harm. He had known these patients for years and had withheld treatment by thyroid extracts because he had considered the chief cause of their obesity to be over-feeding. The treatment of such patients is, indeed, a delicate psychological problem. The physician of to-day is confronted by an embarrassing choice. He may think, and if he is rash he may say so to the patient, that his or her obesity reflects more credit on the skill of the cook than on the alimentary austerity of the diner. The difficulties which Dr. Mosler discusses are only a part of a larger problem which recent advances in medicine have made acute. The discovery of insulin and other potent agents in the metabolism of the body has created a very widespread impression that years of sinning against the laws of health may be atoned for with a few injections of an extract of some endocrine gland. There have been times in the history of the spiritual world when it was generally taught that the misdeeds of a life-time could be suddenly neutralised by the judicious employment of appropriate incantations, and at the present time this optimistic tendency to trust to the short cut to reform is very manifest in the world of medicine. Dr. Mosler's aspersions on the conduct of private hospitals will not, we believe, find any general echo in this country, but in his discussion of the dangers of wholesale thyroid medication he has undoubtedly given prominence to a danger which is not confined to Germany.

## PULMONARY INFECTION WITH VINCENT'S ORGANISMS.

Dr. Clyde McNeill,[1] of the Medical Clinic of the Halstead Hospital, Kansas, remarks that the spirochætes and fusiform bacilli of Vincent are widely distributed throughout the entire world, and have been known to cause a great variety of lesions in the human body, including infections of the skin, external ear, middle ear, gums, mouth, throat, gastro-intestinal tract, trachea, and bronchi. He now records a case of pulmonary infection with these organisms, of which no previous example to his knowledge has been reported in the literature. The disease was clinically and bacteriologically indistinguishable from pulmonary tuberculosis, but was easily diagnosed by a stained smear of the sputum, and cleared up like magic under treatment by intravenous injections of salvarsan. Dr. McNeill's patient was a man, aged 36, who on admission to hospital had been suffering for two months from progressively increasing weakness, loss of weight, constant cough with muco-purulent sputum, epigastric discomfort, and occasional attacks of diarrhœa or constipation. There was no trace of ulceration or inflammatory changes of any kind in the mouth or pharynx. There was diminution of resonance over the upper third of both lungs anteriorly and posteriorly with intensification of the whispered and spoken voice, and there were a few moist râles at the apices after coughing. X rays showed areas of consolidation of varying intensity in the parenchyma of

[1] Bulletin of the Johns Hopkins Hospital, November, 1924.

the lung involving both upper lobes and presenting a striking similarity to the lesions seen in advanced active pulmonary tuberculosis. When the sputum was examined several hours after collection various bacteria were found, but no fusiform bacilli or spirochætes. When it was examined one to two hours after collection a few spirochætes were found but no fusiform bacilli, but immediately after it was coughed up it was found to be an almost pure emulsion of spirochætes and fusiform bacilli. The patient was treated by intravenous injections of neoarsphenamin, the first dose consisting of 0·6 g. and the next three of 0·9 g. on each occasion. After the second injection the general malaise, cough, expectoration, pulmonary consolidation, and gastro-intestinal symptoms disappeared. The patient gained 32 lb. and was hard at work two months later.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CIII.—THE TREATMENT OF CARBUNCLES.

A CARBUNCLE is due to a molecular necrosis of the subcutaneous tissue, the result of infection with the *Staphylococcus aureus* or, in about 10 per cent. of cases, with the *Streptococcus pyogenes*. Little liquefaction of the necrosed tissue takes place and healing can only occur after the large central slough has been extruded. Carbuncles occur only in debilitated patients, and are a frequent complication of constitutional disease such as diabetes. The aims of treatment can be divided into two main classes—general and local. General treatment must be directed at (1) increasing the patient's resistance to the spread of infection, (2) elimination of toxins, (3) the production of sleep. Local treatment must secure (1) the relief of pain, (2) the removal of all necrotic tissue, (3) the arrest of infection in the surrounding parts, (4) epithelialisation of the raw surface after separation of the slough.

*General Measures.*—The patient's resistance to infection is increased in proportion to the degree of control of any constitutional disease from which he may be suffering; his general strength must be kept up by judicious feeding, the feeds being light, nourishing, and given at intervals of two hours. Eggs and milk should be the staple articles of diet. In cases where the patient's resistance is much lowered resource should be had to blood transfusion as an initial step in treatment. Vaccine treatment in severe staphylococcal infections is disappointing, often resulting in a temporary depression of the patient's resistance; for this reason vaccine and serum therapy is not advised in the acute stage of the disease, although small doses of an autogenous vaccine sometimes produce benefit in the later and chronic stages. Elimination of toxins is accomplished by flushing out the kidneys and bowels and promoting gentle secretion from the skin. Treatment is started by a saline purge and the bowels must be kept open each day by an adequate dose of salts; where there is evidence of intestinal decomposition small doses of calomel, gr. ¼ hourly up to gr. 1, should be given for three days. Large quantities of fluid, lemonade, barley-water, or "imperial drink," must be taken; a gallon a day is not too much. Finally, where the patient is well enough he must have a warm bath once or twice a day, or failing this a blanket bath. Sleep must be obtained at all costs. Where pain is the predominant factor in keeping the patient awake an adequate dose of morphia should be given.

*Local treatment* may be operative or non-operative, but in all cases immediate steps should be taken to give the patient as much relief as possible while other arrangements are being made. The affected part should be kept at rest, as every movement causes pain; where a limb is involved it should be placed on a splint. A wide area around the carbuncle should be shaved and cleansed thoroughly with soap and water or ether, and then large fomentations made by wringing out several layers of boric lint in boiling water should be applied to the inflamed area and covered with jaconet and a thick layer of cotton-wool. Fomentations should be changed at half-hourly intervals except when the carbuncle is situated in such a position as to necessitate moving the patient and causing him undue discomfort.

*Operative Treatment.*

This should be looked upon as an emergency operation; a delay of 24 hours or more so that the patient may be "properly prepared" entails a great deal of unnecessary suffering and intoxication. The enema is the only stage of the routine preparation that need be taken. A general anæsthetic, not simple gas, should be given, so that the operator may have ample time to attend to the details of his task and may secure the dressings in position before the patient comes round. When the patient is anæsthetised any further shaving that may be necessary is done and the operation area thoroughly cleansed with ether. It is better to avoid the use of any coloured antiseptic such as iodine or picric acid at this stage as the extent of inflammation in the skin may be masked by the stain. There are two main operations practised for carbuncle: total excision of the diseased tissue by a circular cut, and incision. The latter is the method of choice in the majority of cases. An incision is made extending throughout the whole length and depth of the diseased tissue; a second similar incision is made crossing the centre of the original incision at right angles to its course. Four triangular flaps are thus mapped out covering the whole extent of the carbuncle. Each flap is raised in turn and all necrotic tissue is removed with sharp scissors, so that a fresh bleeding surface is left on the inside of the flaps and on the base of the operation area. Oozing may be controlled by packing tightly for two minutes with gauze wrung out in hot saline. Where there is intractable bleeding it is best dealt with by touching the bleeding points with the actual cautery, and for this purpose there is no better instrument than an ordinary soldering iron.

When all hæmorrhage has been controlled the wound is packed with gauze soaked in a concentrated solution of magnesium sulphate; jaconet and then a thick layer of absorbent wool are applied and the patient returned to bed. The dressing must be changed at the end of 24 hours and after that will probably require renewing twice a day. The advantage of the magnesium sulphate dressing is that it promotes a free flow of serum which tends to wash out toxins from the wound and to limit the spread of infection. Healing appears to be more rapid with this than with any other method. Its great disadvantage is that it requires frequent changing.

An alternative to the magnesium sulphate dressing is bipp. A little bipp is taken on a piece of gauze and rubbed firmly into the walls of the wound, all excess of ointment is sponged away and the cavity packed lightly with gauze. This dressing may be left in position for two or three days and then renewed under gas.

A popular method of treating the wound after removal of the slough is by cauterisation with carbolic acid. Each of the four flaps is held back with a tissue forceps and then a tiny gauze mop is taken in a pair of pressure forceps and dipped in liquid carbolic acid. This is dabbed over the walls of the cavity, care being taken to avoid the skin edge. The cavity is then sponged dry and packed with gauze. It is claimed for this method that it arrests all hæmorrhage and kills off any organisms that may have been left behind after the excision of tissue. Also that carbolic acts as a local anæsthetic and the patient is spared much pain after the operation. The disadvantages of the carbolic treatment are that the new sloughs take a long time to separate and healing is correspondingly retarded. Again, if carbolic be applied over a large surface there is some risk of carbolism from absorption. As an alternative to carbolic acid, fuming nitric acid has been employed, but it has little to recommend it.

*After-treatment.*

All first dressings should be performed under gas anæsthesia. The gauze dressing should be soaked before being removed and then the wound cleansed by irrigation with saline, eusol, or hydrogen peroxide (¼ vols.). In replacing the packing care must be taken that the edges of the wound are packed well open and are not allowed to become undermined. The skin around the wound should be well cleaned at each dressing with ether; this minimises the risk of infection of the neighbouring hair follicles, with the formation of a crop of boils. Too much emphasis cannot be laid on the importance of keeping "the injured part at rest" whether by splinting or sand bags. Should it be found at any time that carbuncle formation is continuing in the edge of the wound the diseased area must be completely excised at a second operation. After excision of a carbuncle the wound ultimately heals by granulation, epithelialisation taking place from the edge. Where there is a large surface to be covered the process may be considerably hurried by the use of the Thiersch graft or by secondary suture.

*Non-operative Treatment.*

The most successful method of treating carbuncles without operation is that devised by the late A. E. Morrison and is dependent on the brisk flow of serum induced from the tissues around the carbuncle by the application of a paste of magnesium sulphate. The following was his method of preparing the paste: "With 1½ lb. of dried magnesium sulphate are mixed 11 oz. of glycerine acid, carbolic, and pure glycerine. The dried magnesium sulphate is in the form of a white powder which contains 12 per cent. less water than the ordinary commercial Epsom salts. The glycerine is put in a hot mortar and the sulphate added, the paste being slowly stirred and mixed with a warm pestle. The result is a thick white cream, so hydroscopic that if exposed to the air it rapidly absorbs moisture and becomes fluid. It must therefore be preserved in a covered jar." The area round the carbuncle is shaved, cleansed with ether, and carefully dried. A thick layer of the paste is spread on a piece of lint and this is applied directly to the carbuncle and surrounding skin. The lint is covered by a piece of jaconet and then by abundant cotton-wool. A profuse discharge of serum is induced and it is generally necessary to change the dressing twice in 24 hours. There is great relief of pain after the first or second dressing, and in the majority of cases the central slough separates in a few days. In the meantime, with the discharge of serum, toxic symptoms are considerably abated, the temperature falls, there is less headache, and the patient feels generally better.

After separation of the slough Morrison recommended packing the cavity with strips of sterile lint wrung out in a saturated solution of magnesium sulphate to which glycerine had been added in the proportion of 5 oz. to the pint. The subsequent treatment is the same as that employed after operation. The one great advantage of this treatment is that an operation is avoided. Against this are the facts that it is slower and more uncertain than operative measures. It should be reserved for those patients who refuse operation or who are unsuitable subjects for a general anæsthetic.

*"Malignant" Carbuncles.*

Carbuncles situated on the nose, or on the surrounding part of the face, so frequently prove fatal that the term "malignant" has been applied to them. Infection from them is prone to travel through the angular vein and its connexions into the skull and cause cavernous sinus thrombosis. Radical operative measures should always be applied from the first in dealing with "malignant" carbuncle even if the plastic surgeon be required to complete the treatment.

H. ERNEST GRIFFITHS, M.S. Lond., F.R.C.S. Eng.,
Surgeon to the Albert Dock Hospital; Senior Demonstrator of Anatomy, St. Bartholomew's Hospital Medical School.

# Medicine and the Law.

## REX v. BATEMAN.

BEFORE Mr. JUSTICE SHEARMAN at the Central Criminal Court, on Friday, Dec. 12th, 1924.

Counsel for the Prosecution: Mr. PERCIVAL CLARKE, Mr. H. D. ROOME, and Mr. J. D. PURCHASE (instructed by the Director of Prosecutions). Counsel for the Prisoner: Sir EDWARD MARSHALL-HALL, K.C., and Mr. ARTHUR DAVIES (instructed by Messrs. Amery Parkes and Co.).

Readers need no reminding that the charge here was that Dr. Percy Bateman, during conduct of a labour, had caused the death or accelerated the death of a patient by failure to call in a second medical practitioner and to arrange for an immediate operation. Sir Bernard Spilsbury, for the Crown, intimated that if the woman had been operated upon she might have survived, and that she would have been a fit subject for operation before her final removal to hospital, where she died. Dr. Bright Banister, obstetric physician to Charing Cross Hospital, and Dr. Hubert Roberts, obstetric physician to Queen Charlotte's Hospital, gave evidence for the defence, as did the defendant himself. Dr. Banister stated that in his opinion immediate removal to hospital would have destroyed any chances of survival and that he could see no evidence that any more favourable time for removal could have been selected, a point on which the practitioner must be the judge.[1] Dr. Roberts said that the woman was in acute danger from shock and a major operation would have been inadvisable.

*The Judge's Summing-up.*

The verbatim report of the summing-up of Mr. Justice Shearman follows:—

Mr. JUSTICE SHEARMAN. Members of the Jury, this is a tragic case. It has been argued, and you have heard the evidence of very eminent people, and I am glad you heard it because it is a matter which demands your most anxious consideration, and I am sure will receive it. The charge against this man, who is a member of the medical profession, is that he by gross negligence has caused the death, or, if he has not caused it, has accelerated the death of a woman. It is a serious charge and I think you quite understand it. Although we are dealing with matters that laymen find it difficult to understand, I think some of you have been in the jury-box before and understand this, that the function of the judge is to explain the law to you, and also, to the best of his ability, marshal the facts and put them in detail to you, but the sole question as to what inferences are to be drawn from the facts which you find to be true and how far you believe or trust one witness rather than another, is entirely for you. I will endeavour to do my part of the matter, and I am sure you will do yours.

I want first of all to explain the law to you. The law is that anybody who causes the death of anybody else—it does not only apply to a doctor, it applies to motor drivers, railwaymen, or signalmen—it applies to a number of people—anybody causing the death of anybody else is criminally responsible. It is equally clear law that no one is criminally responsible for what I call, making a mere mistake, and it is really for the jury to draw the line between what is called making a mere mistake, an error of judgment, and doing something which is grossly and palpably wrong. I have only one objection to make to the law as put before you by the Counsel for the defence: that a man is bound to do to the best of such skill as he has. That is not quite accurate. A medical man who practises for profit the medical profession professes skill; he does not come and say: I am an unskilled person—he is engaged and

[1] See p. 51.—ED. L.

professes skill. Of course, you will understand it is not for every humble man of the profession to have all that great skill of the great man in Harley-street; but, on the other hand, they are not allowed to practise medicine in this country unless they have acquired a certain amount of skill; they are bound to show a reasonable amount of skill according to the circumstances of the case, and you have to judge them on the basis that they are skilled men, but not necessarily so skilled as more skilful men in the profession, and you can only convict them criminally if in your judgment they fall below the standard of skill which is the least qualification which any doctor should have. You should only convict a doctor of causing a death by negligence if you think he did something which no reasonably skilled doctor should have done. You have got to consider if this man in anything he did fell below the level which you expect of a doctor—below that degree of skill which you think you have the right to expect of a doctor—by no means the extreme skill which everybody knows of, but that degree of skill which you expect from a doctor who attends an accouchement and who is taken to know his business. There is one other thing about the law I have to say, and that is, some doctors at times have to deal with people who are very ill and are bound to die, and it is no good to say: "Oh, I gave the wrong physic, but she would have died afterwards"; and I shall leave it to the Jury to say whether the death was caused or accelerated by the treatment administered. In adopting the word "accelerated" you have got to act with great caution. It really means this: That you think by the treatment the patient died when otherwise she would not have died substantially at the time she did. You will consider carefully, and it is only right that you should consider carefully: Well, if he had done something else she would have lived a day longer, and whatever her chance was, her chance of living was taken away by his attitude. You will apply that test. That is all the law I will explain to you.

Members of the Jury, I want to shortly go through the evidence, because this, as I say, is an anxious case for all concerned. You must neither neglect the case of the woman nor neglect the interests of a man in an honourable profession; he is being tried criminally and alleged to be the cause of her death. This woman was the wife of a poor man, a builder's labourer. She had had four children and was acquainted with the pangs of childbirth. She expected her fifth child in the third week in July and she had provisionally engaged the services of a midwife. She had had pains on the Monday and they passed off in the afternoon and you may think, it is entirely for you, that she knew she was not going to be delivered at once because she was experienced. At any rate neither she nor her mother sent for the midwife. She had pains on the Tuesday and they passed off in the afternoon. It is said by the defence that these were three days of labour, and it is said by the prosecution these were ordinary preliminary pains. On Wednesday labour came on and in the afternoon she sent for the midwife. The midwife she had engaged could not come and the lady you heard yesterday afternoon came. It is entirely for you, you have seen the witness, and if she is to be belittled I am a little astonished because she gave evidence in favour of the defence. She said she had had over 30 years' experience, and she said she came in the afternoon before the doctor came in, and that if this delivery had gone off properly no doctor would have been sent for at all. She was there to assist the lady and she said she put her hand outside the stomach and she felt the living child. She also said in cross-examination that she did put her finger in and she felt, she thought, the symptoms of a head. In ordinary delivery a child comes through the womb either head first or feet first; either of them are proper modes of delivery. Putting her finger in she felt the head and for some time, more than an hour, nothing happened and the pains continued and she said: This is beyond me, I will send for a doctor, and she asked the mother herself who she wanted, and Dr. Bateman was mentioned, and Dr. Bateman was eventually sent for, and some time after 10 o'clock in the evening he arrived. While I am dealing with her evidence let us recollect this, that what is called the vagina is the entry into the womb; what is called the uterus is the womb. The uterus itself is a species of bag with a mouth which is fastened, because the mouth down below is firmly fixed to the flesh; it is itself a sort of bag with muscles and full of blood-vessels and it is fastened at the top and sides with what are called broad ligaments. The doctor came in and took his coat off. When he found two other people in the room prepared to assist at this childbirth besides the midwife he, admittedly quite properly, ordered them out of the room. The midwife had dressed this woman in her nightdress and skirt, which is usual for childbirth. The woman was put on the bed and the doctor began to work away and the child would not come. It is admitted he worked away with her, and according to his account in the letter, he had to use great violence or great force. Do not take the "violence" against him, it means "great force." He worked at this for an hour. There is one thing, of course, you will notice, and that is that during the whole of the time the midwife was there; she was looking on and assisting, and she makes no complaint of his violence or force. You will bear that in mind, and that is why I wondered that this lady's evidence was attacked and they tried to say she was not able, when her evidence is for the defence, which is, of course, that there was nothing done by him in that room which was to her, as a midwife, anything that was improper. He worked for an hour and the child came out dead. During the whole of the time, and this is the evidence of the midwife, blood was flowing freely and the child was produced. Let me pass on till we come to the post-mortem to find out what really did happen. Because all the four doctors, the doctors called for the prosecution and the defence, happen to agree on a theory, that is no reason why you should accept it, but it may make you ready to accept it when you find the competing authorities agree. No one disputes that the bladder was ruptured and that there was a rupture of at least two inches. No one disputes that, the intestines being crushed against the sacral bone which comes near there, there was a wound in the intestines as well only done by pushing; at some time or another I should have mentioned that the doctor used instruments for a minute and then stopped, and he gave them up, and no one suggests any harm was done by the use of instruments. For about an hour he was pushing the child, this being what is called a difficult presentation, and at any rate the fœtus or small baby was cross-wise across the womb, if nothing worse. "Transverse," as you know, means "across," and it should come head downwards or feet downwards and the proper business is to turn it and get it out. It would appear that during the course of the hour's work that this man gave to procure the childbirth the womb was broken, ruptured, and injury was done to the bladder, and injury was done to the intestines, and he produced the child dead. When he had produced the child dead the woman then was in a state of collapse; she had been bleeding freely and that was noticeable to him and the midwife as well, but the midwife does not recollect that he gave her some strychnine in order to revive her. She says she does not recollect it, but the doctor says he did. That is the midwife's account. I will give you the account of what happened after the child was produced; it was a full-time child. She says this: "Then he went for the placenta." That is a Latin word—it is a kind of membranous stuff which is in the habit, if things go all right, of coming out itself—or it is also called the afterbirth. "He delivered the child: he tied the cord and separated the child and I took it away and put it on the bed. He went for the placenta. This was going to be put into the chamber"—which she afterwards called a vessel. "I saw him remove the

placenta; he pulled it out sharply. I handed him the vessel to put it in. There had been a considerable flow of blood and after the placenta was taken away the bleeding ceased to a certain extent and Mrs. Harding seemed very feeble. After the placenta had been brought away the doctor said, 'Leave her in bed, she is very low and very feeble,' and then he got ready to go and I asked him to examine the placenta before he went and I put it on a chair. I looked at it and I did not know what it was. I said, 'What is this? I never saw anything like that before'; he said, 'Good God, what have I done?' I said, 'I do not know, what is it?'; he said, 'Do not you know?' and he then told me it was the uterus. I said, 'Surely not,' and he said, 'Whatever shall I do?' I said, 'I do not know,' and he removed the placenta and he said, 'Give me something to wrap it up in and I will take it away.' He put it in his bag and took it away. I asked him if he did not think the poor woman ought to go away." That expression is always used, and it means to be taken to the hospital, because you know that with these poor people the Harley-street or second opinion, or more skilful opinion, is obtained at the hospital and not by calling in an expensive doctor to give another opinion. "He then washed his hands and went away." She remained a little while. She does not say in this court that the doctor told her not to say anything, but he admits that he told her not to say anything, and he says it was because "I thought the woman was going to die and I did not want to shock the relatives by letting them know what had happened." The woman was left in bed and the mother-in-law and sister-in-law came in the room. The woman was put on her side in bed and the midwife and doctor went away and she was left there and neither came back till the next morning.

That is the whole of the evidence with regard to what is called the first part of the case. It is said that this man so treated her that by his treatment he committed all these injuries, he ruptured the womb, he ruptured her bladder in pushing about, and he caused the injuries to her intestines; and in the same way it is said that when he came to pull out the placenta instead of pulling the placenta out of the womb he caught hold, not of the placenta, but of some tear or slit in the torn womb and with a tug, the expression was "a sharp pull," he pulled it away. It is said by the Crown that that shows that in doing this, and in pulling out the womb, he was guilty of gross negligence. It is said on behalf of the defence, and they called eminent surgeons—it is said on behalf of the defence: Well, the nurse saw nothing wrong with the way he treated her although the force was used and necessary, and it was unfortunate. It is said there was no gross negligence, and it is for you, if you feel any doubt, to see that the prisoner gets the benefit of the doubt, but are you satisfied on that that there was gross negligence? The doctors called for the defence say this; they say "Oh, it is quite reasonable to mistake a tear in a womb for the placenta." That is entirely a matter for you, and it is a view not entirely accepted by the doctors called for the prosecution, although they agree in cross-examination that after all this working a portion of the womb might be torn, but a reasonably skilful man might know the difference between pulling a womb and something that might be adherent to the inside, and the prosecution call attention to the fact of the steady outflow of blood and say that in pulling out the womb he was guilty of gross negligence, and the defence say, a very natural mistake in the circumstances of the case. The witnesses called for the Crown took this view; they took the view that the pulling out of this was a matter which people ought to see; and the witnesses for the defence take the view it is natural, there is no gross negligence, at any rate it is quite a natural thing under all the circumstances of this difficult presentation to make a mistake. Dr. Spilsbury said it would want some considerable force, whatever happens, to pull away the womb: it came away with one ovary and one tube attached to it. It was said by Dr. Spilsbury there must have been some considerable force to get it away, and the defence say it might easily come away if there was some damage done before.

Let me pass on to the second question. The Crown first of all say there was gross negligence, and you will not find it unless you are quite satisfied of it, in pulling away the womb at all—in what he did before and in pulling it away. It is suggested by the defence nothing of the sort, at most and at worst it was a very difficult case, and at most and at worst it was a mistake, and we say it was not negligence, it was the sort of thing that might happen in this remarkable case. It is admitted that the coming away of the womb in the case of a child-birth is almost unknown. Dr. Spilsbury in his wide experience has only heard of it twice, and the doctor who was in charge of Queen Charlotte Hospital said: "I have had under my charge 60,000 cases and I have never heard of such a case," and the other witness said he had not heard of such a case. Dr. Spilsbury said when it has happened before, in his experience the child has died at once.

MR. DAVIES. Dr. Banister said he had two cases.

MR. JUSTICE SHEARMAN. I think he said as regards turning the womb inside out; certainly at the hospital he said there had been no case, but at any rate it does not matter whether they heard of one or two cases, it is an extremely rare case, and one of those cases where the experts differ. As you know, expert witnesses who come are called to say they have read the evidence and give their views and give their evidence on their instructions. Dr. Spilsbury for the Crown says this is what is called a transverse presentation and until evidence was given before the Coroner, in the letter and in the evidence given by the nurse, it was never said this was a difficult case—it is a transverse presentation, which means cross-wise. When this man gave evidence before the Coroner he made it much clearer that it was what is called a complex case, and that it was what is described as a transverse presentation. In ordinary language transverse means cross-wise, and he means the whole thing was doubled up. When you find differences in expert witnesses you must remember the Crown witnesses were giving evidence on the assumption that this was a transverse presentation and the whole of the evidence for the defence was given on the assumption that the child was doubled up in the way you saw the rubber doll doubled up. If you think it was not transverse at all you may consider that it weakens the evidence for the Crown, but on the other hand the evidence for the defence is considerably weakened if you believe it was given on the basis that there had not been one day's labour but three days, and, secondly, that the presentation, such as it was, was this extraordinary and difficult presentation of head and feet together when it is said the child was dead. The Crown say that is not true, that the child was evidently alive, and if the child had been all this time with its head and feet together it could not be alive, and that that story given at the inquest or to the expert witnesses at all events is not accurate.

Passing away from that and summing-up the first case, if you think and are quite satisfied that it was his treatment in tearing away the womb—previous to and up to tearing away the womb—you will convict him; if you are not satisfied and think there was no negligence at all, or if you have a reasonable doubt whether there was gross and culpable negligence up to that point, you will acquit him. Then this man went away, and let me trace the doctor's movements. He went away and came back the next morning and he never examined or did anything to the broken ligaments or the broken blood-vessels. The womb had gone and there were there injuries which he knew nothing about, and I daresay they could only be discovered by examination, but he did nothing. Afterwards he came twice every day and I think he sent a sleeping draught and came and called to inquire how she was. On the first day he called he saw the witness Miss Lehoux, I think it was, and he said "How is she?" and she said, "She is getting on." "Oh, that is very funny," he said, because he was surprised she was alive; and to another witness on the Friday, Mrs. Barwick, he said, "I am surprised to hear she is

still alive." He came again on the Saturday and on the Sunday and on the Monday, and on the Monday or the Sunday night the nurse came to see him and the nurse said, "Ought not this poor woman to go away to hospital," and he said, "I will see about it." Eventually three times during the course of the day somebody went round to the house and left messages for him, and finally, at 5 o'clock, he made an order for her removal, but before we get to the removal let us see what the other witnesses say, because there is a conflict of evidence which you have to decide. The nurse is not in the place all the time; she goes away. She knew what had happened; she knew the womb had gone; she was the only other person who did know. She came the next morning and she saw this patient once a day. Her view was that this woman was slowly and gradually collapsing; she never was any better. That was the nurse's view. On the other hand, that is not the view of the members of the family. This is the husband's account of it anyhow—I am mentioning this on the question of whether removal was possible or not; the husband said, "On Friday she was very weak and she continually vomited"—that is agreed—"that she did not keep anything down." Dr. Spilsbury's reason was: He said there was paralysis of the bowels; they were unsupported and she was paralysed; the other witnesses say it was not paralysis, but I do not know that it matters very much, but the witnesses say she could not eat anything. "On Friday she was bright, but still weak and vomiting." They say on the Sunday morning in the daytime she was much brighter, but night came on and she became worse and she had bad pains on Sunday night, and it may be that was the peritonitis, which is inflammation of the coating of the stomach, and she got worse and she was in continuous pain all the Sunday night. That is roughly the evidence. The doctor may have said, "I am surprised she did not die; I expected her to die at the time." But in the meantime from that time to this he had done nothing to her; he had sent her Epsom salts to try and clear her bowels and they were immediately ejected—she could hold nothing and there was nothing done by local injection. The case presented by the Crown is this; they say when once this womb was torn away there were broken blood-vessels, or whatever they are, and there may have been no flowing of blood afterwards because this poor woman's circulation was nearly gone and it may have been that these veins tend to clot and they do not go on bleeding. What is said by Dr. Spilsbury is this; he says here was the womb out and there was nothing to support the pelvic floor, and the intestines must drop as soon as she got up, and something had got to be done to see that the bowels were kept from prolapsing, which means falling down, and to see that these wounds which had been bleeding were in some way sewn up or fastened so that there was a chance of her recovery; and Dr. Spilsbury particularly says unless something was done recovery was hopeless—unless this floor was "restored," was, I think, his expression. He said there must have been death unless the floor was restored. All these experts I say are giving evidence on facts put before them; they were not present and did not see the woman. He says as soon as she rallied sufficiently from the state of collapse she ought to have been fit for an operation. What is said by the Crown is that what this man has done is this: That he knew he had pulled away something; and whether he was guilty of gross negligence in his conduct up to that time of pulling out the womb is a question for you, but knowing he had done it he was guilty of gross dereliction of duty in doing nothing for her thinking she would die, and she would not have died when she did if something had been done for her; and it is for you to say whether what he did in taking away the womb and telling nobody about it, not treating her in any way and not sending her off to the hospital, was because he thought he would avoid inquiry into his previous conduct by letting this woman die of neglect. That, substantially, is the case for the Crown on the second part of the case, and they say substantially he was guilty of grave wicked neglect and culpable neglect of duty in not taking some steps to remedy what had been done by his own fault, or if you do not think it was gross negligence they say he ought to have done something to try and save this woman's life, but he did not do anything because he wished to save his own reputation.

That is the case for the Crown. The case for the defence is admittedly she was very weakened: "I could not get Harley Street to help me; I did not take her to the hospital because she was up four flights of stairs and it would have killed her to take her down." It is admitted that she was taken away four or five days afterwards; she was taken away and lived for something like 30 hours after she went from there to the hospital on Monday morning and she died very late on Tuesday night. She lived 30 hours after she had gone, and if on the Thursday or Friday she had gone they might have done something to save her life; but the case for the prosecution is: You did nothing and accelerated her death at the time it was caused. If you have a doubt the prisoner gets the benefit. The case for the defence is: This was hopeless and the only thing to do was to leave her quietly to die instead of taking her to the hospital and that he thought the best thing was to let her die and leave her where she was. The experts for the defence agree it would have been a good thing to try something in the nature of drainage, but an operation was hopeless. But they had not seen the woman, nor had Dr. Spilsbury, and they are only giving such advice on the material put before them. The material put before them is that the woman was very weak, and it is said she was rallying a bit on Friday up to the Sunday morning and something ought to have been done. What is clear, and that you will have to bear in mind, is that admittedly she had not a very good chance once the womb was removed. But the case for the Crown on the second part of the case, which it is for the Crown to prove to your satisfaction, is that owing to the breach of duty in concealing the fact and not letting anybody do anything to help her, not communicating with the hospital, doing nothing, and it is suggested with an expectation that she would die, he substantially accelerated her death and took away any chance this woman had of being saved or having her life prolonged by an operation. Whether she could have had an operation and what was her state of body and health depends on the inferences you draw.

Let me pass on to what evidence there is from this man himself. When he did send her to the hospital his view was she would die at once if sent. Admittedly she got very much worse on the Sunday evening. The nurse sees him on the Monday, and on the Monday afternoon sends a letter, and this letter runs as follows: "Dear Dr. Wiggins"—we only saw his assistant Dr. Buchanan—"Dear Dr. Wiggins, I was sent for on Wednesday last by a midwife to attend a Mrs. Harding, of 25, Norfolk House, Deptford; she had been in labour for over two days; the labour was transverse"—you notice there is not a word about it being doubled up; I will say something about that again later—"I delivered her after considerable trouble. On extracting the placenta I found to my surprise that the uterus came with it." I will hand this letter to you, you are the judges of it. It is said that was not a candid letter. It is said a certain impression would be given to the doctor—for the placenta to come away with the uterus is an almost unheard of thing—and that the meaning of those words is that he extracted the uterus and put it in again. This is his story: "Evidently the uterus had been expelled into the pelvic cavity sometime previously and the uterus had contracted firmly on the placenta; she was very collapsed"; and then comes this remarkable statement: "She has been doing fairly well until the present but is now in a bad way and cannot be looked after at home. I am therefore sending her to the infirmary." If that means anything it means "I thought she would recover at home, but now she has got worse and I am sending her

to the infirmary." It is said it is not the real truth, but he was trying to keep something back. You are not trying the question of whether he was keeping something back, but whether he was guilty of gross negligence. The woman was taken to the hospital. She was very bad when she got there but she was conscious. On the Tuesday she was becoming rapidly unconscious. She lingered till about 2 A.M. on the Tuesday night and she died. Then there was inquiry made and there was a post-mortem examination. The matter was brought before the Coroner about a week afterwards. This man was not summoned before the Coroner, but a message was sent by the Coroner's Officer that there was going to be an inquest on this woman and he went, and the uterus was asked for, and he said he had got it and went back for it; there were some snips at the side of it and he gave the explanation that when he took it home he thought of this extraordinary thing and he cut it up to see what it was and there was nothing. Those are the historical facts. Do you think, assuming you are satisfied by the prosecution that in pulling away the womb at all and the acts preceding, that he was guilty of gross negligence and culpable negligence in causing her death?

Then you come to the second head: Was he guilty of gross or culpable negligence in accelerating this woman's death by so neglecting her from the time that he knew her uterus had been removed? If you are quite satisfied that the woman wanted treatment and, from the history of the case, that if she had had some treatment her life would have been prolonged, you will find him guilty; if you have any doubt about it you will find him not guilty. I will remind you of what I said to you at the outset, that you have to be satisfied, not only that he was guilty of gross and culpable negligence, but that he caused or accelerated her death; and there again is this difficulty, and you have to weigh it, that Dr. Spilsbury says that in his view her life would have been prolonged and she had a reasonable chance, not a strong chance, of surviving, if those tears and wounds had been attended to and the danger of blood poisoning by septic poisoning had been attended to by treatment. Even the doctors for the defence admit, although they do not say it was culpable negligence, that if there had been some effort to drain—an operation, they say, was impossible from their view by the facts put before them—if something had been done—(there was urine coming through—there was a crack or small hole in the intestines and stuff was coming through and was likely to cause the peritonitis which afterwards ensued)—it would have been better. There is only one other matter, and you have to be satisfied before you convict the prisoner, and that is the evidence he gave before the Coroner. It runs as follows, and I will hand it over to you: "I was called to see the deceased on Wednesday, July 23rd, shortly after 10 P.M. I found her in labour and was informed that she had had pains for two days previously. I could feel the head quite easily. I gave chloroform and applied instruments; they slipped at once." Then he adds this: "It was a transverse position, the feet, head, and cord were all presenting together." There is no hint of that in his letter; there is no hint until he comes before the Coroner. It is said by the Crown when he is on his defence and he is called to explain that, then he is giving a different account to what he gave before. The account he gave then was: "It was not, strictly speaking, a transverse presentation, it was head and feet together," what one of the doctors said was a complex presentation, and then he says, "Immediately I put my hand into the vagina I found a foot. I had great difficulty in turning the body because the child was outside the uterus; it was in the pelvic cavity; it had been expelled into the pelvic cavity." Everybody agrees now, his experts and himself, that when he says "When I put on the instruments I did get hold of the head, but I maintain that the child was in the pelvic cavity and outside the uterus at that time"—I do not want to go into the difficulties as to what is meant by the pelvic cavity, because I think it is now admitted by the defendant and his witnesses that obviously he was wrong in that statement; and, of course, the fact that he put up a statement or defence which is wrong makes you scrutinise more closely his conduct, but it does not necessarily prove because he made a mistake in his account of it that he was guilty of gross negligence in what he did. Then he goes on to say: "When I first saw the patient she was not collapsed." Then he says: "I found it difficult to push the head back because it was outside the uterus but eventually I did deliver her after being under chloroform for at least an hour, feet first by manual traction. I had to use tremendous violence. I had to wring my shirt when I went to bed, I had sweated so much over the job. It was the hardest case I have ever had. After delivering the child I extracted the placenta immediately. It was in the uterus, it came away quite easily. The room was badly lit at the time and the mother was practically dead at the time. I placed the placenta and what I thought was the membranes hurriedly in the chamber and attended to the mother in order to save her life. I felt the woman's pulse and found it was absent. I gave her a hypodermic injection of strychnine after which she rallied slightly. Both Mrs. Cleak and I placed our hands over the abdomen to see if the uterus was contracting and to our surprise we could not find the uterus. Mrs. Cleak then brought me the chamber and I found that the uterus was there and the placenta was inside the uterus which had thoroughly contracted over it. Therefore when I saw what had happened I did not want to shock the relatives and I told her (Mrs. Cleak) to say nothing about it." So that only about a fortnight afterwards he then did not present the same story which he presents here, that this was not strictly a transverse presentation but it was this head and feet presentation which caused so much difficulty, and which is admittedly the most difficult of all the presentations, and almost unknown in the history of childbirth, and which is very, very rare at any rate. I give that to you at the last because it again presents his case as it is put here, and his case as put here is this. He says: "I concealed the fact that the uterus was taken away. I said in this letter the uterus was away and I told the hospital authorities that on the Monday, but I did it for the best. The motive, the reason, I left her there was I thought if I took her away she might die; it would kill her on the spot to take her away—and therefore it was a legitimate exercise of my opinion to let her stop there." It is said by the Crown: Nothing of the sort, he should have done something, and the reason he left her there unattended to was to save his reputation and not to save or benefit the patient.

That is the whole case. If you are satisfied that either in the way he delivered the child or in the way he acted afterwards he acted with gross negligence and thereby caused her death, you will find him guilty; if you are not satisfied you must acquit him on that part of the case. If you think after the womb had come away his conduct and neglect of her substantially accelerated the date of her death—if you are quite satisfied of that you will convict him on that part of the case. If you feel any reasonable doubt on either theory you will give him the benefit of the doubt and acquit him. Will you please retire and consider your verdict?

*(The jury retired at 4.5 and returned into Court at 5.15, a bailiff being sworn to take charge of the jury.)*

THE CLERK OF THE COURT. Members of the jury, have you agreed upon your verdict; do you find the prisoner, Percy Bateman, guilty or not guilty on this indictment?

THE FOREMAN OF THE JURY. Guilty, my Lord.

THE CLERK OF THE COURT. You say that he is guilty and that is the verdict of you all?

THE FOREMAN. It is.

Mr. JUSTICE SHEARMAN. Have you anything you want to say, Mr. Davies? There is nothing against this man; there is no justification for calling the police or anything of that sort?

Mr. DAVIES. I feel the agony of this verdict is sufficient and nothing I can say will——

Mr. JUSTICE SHEARMAN. I appreciate what a serious thing a conviction is. I hope nobody will think I treat a charge like this with levity in giving a short sentence. I appreciate with a professional man what a crushing blow a conviction is itself, and the sentence of the Court is six months imprisonment in the Second Division.

# Special Articles.

## INFECTIOUS DISEASES ABROAD.

THE following general summary is compiled from the monthly Epidemiological Reports published by the Health Section of the League of Nations, supplemented, when possible, by more recent information from other sources.

*Plague.*—The most important occurrences since the issue of the last summary[1] are a new outbreak in the Azores and the apparent cessation of the outbreaks at Lagos (Nigeria) and Los Angeles (California). In the Azores the locality affected is about three miles from Ponta Delgada, the chief port of the island of St. Michael. Eight deaths were reported during the week ended Dec. 12th. The epidemic at Lagos, which began at the end of July and attained its maximum during the week ended Oct. 13th, is reported to have ceased in the second week of December. The total cases notified during the epidemic were 406 and the deaths 337. In the Los Angeles outbreak[2] the pneumonic cases apparently ceased during the week ended Nov. 5th, but they were followed by several cases of bubonic type. The latest information available, dated Dec. 6th, reports one new case of bubonic type from the area originally infected. Other recent occurrences in different parts of the world were: United States, one case at New Orleans week ended Dec. 9th; Brazil, two cases at Bahia week ended Dec. 11th; Peru, 24 cases during October, of which 14 occurred at the port of Lima; Egypt, one case at Port Said week ended Dec. 2nd; Algiers, three cases during November; Senegal (French West Africa), 161 cases between August 11th and Sept. 10th; Union of South Africa, in four States or Provinces between Oct. 7th and Dec. 4th 24 cases, of which 20 in the Cape of Good Hope Province were reported to be of pneumonic type.

*Cholera.*—In India as a whole the curve of cholera incidence for the year began to slope downwards after August and is now approaching its lowest level, but it is evident that when the total figures of cases and deaths for the present year are known, they will greatly exceed those of 1923 and 1922. Outside India there are very few cases at present.

*Yellow Fever.*—The cessation of yellow fever in the Republic of Salvador was officially notified on Nov. 13th, when 19 days had elapsed since the last reported case in Ahuachapan and 29 days since the last case in San Salvador City. Measures for the reduction of *Stegomyia fasciata* have been prosecuted energetically for several months and it is now considered that the risk of spread has ceased. In British Honduras three cases, one being fatal, were notified between Nov. 18th and 22nd in a locality 19 miles west of the port Stann Creek. The colony was officially declared free on Dec. 12th.

[1] THE LANCET, Dec. 6th, 1924, p. 1198.
[2] THE LANCET, Dec. 13th, 1924, p. 1251.

*Typhus.*—There has been no noteworthy change in the incidence of typhus in the various countries of Eastern Europe since the issue of the last summary. At Constantinople between Nov. 9th and Dec. 6th five cases with one death were notified.

*Small-pox.*—The small-pox situation remains favourable in nearly all European countries. In Switzerland the cases notified up to the end of November this year numbered only 1226 as compared with 2119 during the same period last year. No case was notified during the week ended Nov. 29th. In Spain the epidemic, which had caused over 900 cases in Madrid and neighbouring towns during the three months from August to October, was officially reported on Nov. 14th to be at an end. Jugo-Slavia was free from the disease from July to the end of October, but in November a new outbreak occurred in Bosnia-Herzegovina.

*Enteric Fever.*—The usual autumn wave of enteric fever is obvious in the monthly returns from most countries and is more pronounced in several countries than it was last year, particularly, for example, in Sweden, Finland, Poland, Czecho-Slovakia, Hungary, and Bulgaria. In Germany enteric fever was more prevalent during the whole summer than in 1923 or 1922, but the incidence declined rapidly after the middle of September. In Italy the incidence during September and October compared favourably with the incidence during those months of 1923.

*Scarlet Fever and Diphtheria.*—The increased prevalence of these diseases continues in Germany and Poland, but in the Balkans the situation is more favourable than last year. The following are some recent statistics of deaths in certain European cities: Paris, Nov. 20th to 30th, four deaths from diphtheria, four deaths from scarlet fever; Berlin, week ended Nov. 22nd, three deaths from diphtheria, one death from scarlet fever; Warsaw, week ended Nov. 22nd, three deaths from diphtheria, ten from scarlet fever; Copenhagen, week ended Nov. 22nd, two deaths from diphtheria, one death from scarlet fever; Vienna, week ended Oct. 11th, three deaths from diphtheria, one death from scarlet fever.

## IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

### *The Minister of Local Government and Women Doctors in Asylums.*

THE Ministry of Local Government and Public Health appears to have been unfortunate in the drafting of a letter sent recently to the committee of management of the Grangegorman Mental Hospital, in reference to the filling of a vacancy among the medical officers of the Portrane Branch. According to the reports of the meeting of the committee, as given in the daily press, instructions were received that as regards medical officerships only men were to be appointed, although the vacancy was due to the resignation of a woman doctor. When questioned on the matter in the Dail, Mr. Burke, Minister of Local Government, stated that his letter gave no general order as to future appointments, but was a particular order dealing only with the existing situation. At the present time, he said, in Portrane Mental Asylum there were two lady medical officers, and there had been considerable indiscipline amongst the male patients of the asylum, and it was considered desirable that a male doctor should be appointed to the next vacancy in order to get over that difficulty.

### *The Woman Medical Officer's View.*

The Minister's explanation might have been considered adequate if the duties of the officer to be appointed were on the male side of the asylum. That this is not so is made clear by a letter from Dr. Kathleen Meade, the medical officer who has

just resigned. The letter was published in the daily papers, and stated :—

"I note that the Minister said : 'It is quite obvious that where male patients have got out of hand it is more desirable that a male medical officer should be appointed to deal with them.' To avoid the misunderstanding that may arise from this statement, perhaps you would allow me to point out that my duties at Portrane since my appointment comprise the charge of the female patients and female staff, and relief duty for the male medical officer who has charge of the male patients and male staff, the latter only being emergency medical attendance. The question of 'discipline' amongst the male patients was not within my province.

"As the vacancy occurs on the female medical staff, it should be obvious that, in the interests of the public and the patients, a woman medical officer ought now be appointed."

It looks as if the Minister of Local Government were trying to escape from a false position into which he had been led by some of the more reactionary members of his staff. It is well, however, that he was tackled on the subject at once, as it would be deplorable if any obstructive policy on the part of his department were to interfere with the employment of women doctors in asylums.

*Payment of Asylum Medical Officers.*

It is not only in regard to the employment of women doctors in asylums that the Ministry of Local Government is tending toward a reactionary policy. In the same letter to the Grangegorman Committee as was mentioned above, it was laid down that future appointments to assistant medical officerships should be made at a salary of £300 without allowances for a period of two years' probation. At the end of that time the salary should be increased by £50 a year. The chairman of the committee pointed out that if such a salary were adopted, the medical officer would be paid less than the head attendant. The resident medical superintendent added that it would be impossible to go to the medical profession with such a proposal, as the pay would be less than that given to the carpenter. It does not appear whether the Ministry thinks that the discipline which it so much desires would be promoted by making the tradesmen superior to the medical officers.

*Queen's University, Belfast.*

Sir William Whitla was appointed a Pro-Chancellor of Queen's University, in place of the late Sir Samuel Dill, at a meeting of the Senate on Dec. 23rd. Sir William Whitla resigned his active duties as professor of materia medica and therapeutics a few years ago, and was then elected to represent the University in Parliament, when the ability which he had shown in the science and practice of medicine became equally evident in his work as a politician.

## SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

*Is Nervous Disorder Blameworthy?*

I HAVE been asked by a prominent Edinburgh citizen whose work, though he is not a doctor, brings him in contact with nervous disorder, why it is that in Scotland such disorders—hysteria and the like—and even definite insanity are regarded in some way as criminal or as highly blameworthy. His point is this, and I give it as far as possible in his own words :—

"I have known one case of suicide from this cause. The victim's relatives could not rid themselves of this notion, and though they were affectionate in their behaviour, they nevertheless conveyed the idea to the unfortunate patient of being a guilty encumbrance upon the earth. To take a less serious example, I have heard a man who spent three years on the Western Front complain bitterly of the contempt with which certain persons at home treated him when his nerves finally broke down. Another individual who had suffered from several severe attacks of depression and had been treated with considerable injustice both by his near relatives and business acquaintances, finally decided to emigrate from the country in the hopes of finding a more humane atmosphere elsewhere. Cases also occur where an organic incurable disease is treated as a mere nervous symptom which could be got rid of by an effort of the will. It seems to be certain that in melancholic cases the condemnation of relatives and of the world is a confirmation of the patient's own condemnation of himself and exerts an enormous pressure against him. Such persons often behave in public, it is true, in an excited manner and give the impression of conceit, when they are in fact only in a state of extreme morbid anxiety and depression.

"The cases I have mentioned occurred in Scotland, where the effect of the severe Calvinist religion still lingers. The Sheriff-Substitute of Ross and Cromarty at Stornoway, in Lewis (i.e., the county court judge) stated in letters to the *Scotsman* some months ago that religious melancholia is more frequent in Lewis than in the other islands of the Outer Hebrides whose inhabitants are Catholics, and I have heard this opinion confirmed by a doctor who had made some investigations into lunacy in these islands. In England, life is more humane and civilised than in Scotland, owing to the gentler type of religion and the long period in which tradition and culture have had the opportunity of development, and it is possible that such cases as those I have mentioned are in comparison with Scotland less frequent. In glancing at the literature on this subject I have not noticed many references to the effect of the hostile attitude of the world upon the nervous or the mentally diseased, except in Clouston's 'Hygiene of Mind.'"

My informant, further, is of opinion that much might be done by the medical profession to create a more humane and intelligent public opinion. He feels that condemnation has a demoralising and even fatal effect in alienating the victim from the world, whereas respect and consideration have the opposite effect. In the Middle Ages the insane were flogged. He considers that the treatment which the mentally disordered often receive nowadays is less violent, but essentially no less brutal.

*St. Andrews Institute for Clinical Research.*

The work at the Institute, St. Andrews, for the spring term will deal with various aspects of the question of renal efficiency. The meetings are held in the Institute on Tuesdays at 4 P.M., and the syllabus promises an interesting series of papers and discussions. The subjects for discussion during January are the following: Metabolism with special reference to the Kidney, on which Prof. E. P. Cathcart, of Glasgow, will read a paper; the Eye and the Kidney, a lantern demonstration by Dr. Maitland Ramsay; the Clinical Application of Tests for Renal Efficiency (Prof. Adam Patrick). On Thursday, Jan. 22nd, Prof. F. J. Charteris will give a demonstration of kidney cases in his wards in the Royal Infirmary, Dundee, and a meeting of the Association for Clinical Investigation will be held in the Royal Infirmary, Edinburgh, on Saturday, Jan. 31st. All practitioners are cordially invited to all meetings of the Institute.

*Edinburgh University Extensions.*

At a recent meeting of the Edinburgh University Court, the Principal, Sir J. Alfred Ewing, announced that substantial donations had been recently made to the University in response to repeated appeals. At the time of the graduation of the Prince of Wales last month it was announced that Sir Alexander Grant had made a gift of £50,000, and more recently other donors have given sums amounting to £16,600. Much more, however, is still required to allow the most urgent wants to be met. It was decided to proceed at once with the scheme for the alteration and extension of the department of surgery in connexion with the grants recently received from the Rockefeller Foundation for the development of clinical teaching and research.

*Royal Infirmary, Edinburgh: Retiral of Mr. Alexander Miles.*

At a meeting of the Edinburgh Royal Infirmary on Dec. 22nd, at which the Lord Provost presided, the retiral on Dec. 31st, 1924, of Mr. Alexander Miles, senior surgeon to the infirmary, was announced, in accordance with the infirmary regulations as to tenure

of office. Mr. Miles was appointed house surgeon to the Royal Infirmary in 1889, his chief being Mr. Alexander G. Miller, now the doyen of the surgical profession in Edinburgh. Ten years later he became assistant surgeon and in 1910 was promoted to the rank of surgeon, his retiral at the present time marking a milestone of 15 years' service in the wards. The board expressed their gratitude for Mr. Miles's services by asking him to allow his name to be placed on the roll of consulting surgeons, and in the minute which embodied this request a sincere tribute was paid to his professional judgment and skill. Mr. Miles, in conjunction with the late Prof. Alexis Thomson, was the author of one of the best known text-books produced by the Edinburgh School of Surgery, and wrote an admirable monograph on the history of the school. For many years he was surgical editor of the *Edinburgh Medical Journal*.

*Glasgow Western Infirmary Jubilee.*

At the annual Christmas meeting of the friends of the infirmary and members of the staff, Colonel J. A. Roxburgh, Chairman of the Board of Managers, announced in his report that the financial position of the infirmary was in a more satisfactory position than it had ever been at any other period of its history. Colonel Roxburgh said that 50 years ago last month the Western Infirmary had opened its doors for the reception of patients, and since 1874–75, when the number of indoor patients was 1253, the infirmary had been growing in usefulness and in accommodation. In the first year the number of outdoor consultations was 5916, while last year it was 149,325. The wards in the original building numbered eight, to-day the number of wards was 32. Originally intended as the clinical school for the University on its then new site at Gilmorehill, the infirmary had throughout its history maintained a close connexion with the University, and the Regius Professor of Medicine and the Regius Professor of Surgery still conducted their clinical teaching in the wards of the Western. The Western Infirmary was one of the earliest hospitals in the country to start an X ray department and this had been in active operation for a number of years. In the research department the progress from the small room in which Dr. Coates began the work in 1875 had been almost beyond belief had they not the splendid buildings of the pathological institute and the clinical laboratory and the work done in them as a reminder of the strides made in this connexion within the last half century. One of the latest additions had been the massage and electrical department which was now a recognised school for training. The teaching of nurses had also of late years been very much developed and rendered more efficient. With regard to finance the Chairman said that although the ordinary income had never been wholly adequate, yet it was encouraging to note the way in which the employees in the public works had within the last few years come to recognise their responsibility in the matter of helping the various charitable institutions carried on for their benefit. Although the finances for 1924 were satisfactory, nevertheless the gap between ordinary expenditure and ordinary income still remained very wide.

*New Operation Theatre for the Royal Infirmary, Montrose.*

At a recent meeting of the board of the infirmary a resolution was passed permitting the erection of a new operation theatre at an estimated cost of £17,000, and to devote £500 donated to the infirmary by Sir James Warwick, of Edinburgh, and also part of £2500 bequeathed by the late Mr. W. Slogie, of Montrose, for this purpose. At the same meeting it was announced that the late Mrs. M'Cay, of Londonderry, a native of Montrose and daughter of the late Adam Burnes, a well-known Montrose solicitor, had left the residue of her estate to Montrose Infirmary, Londonderry Infirmary, and St. Dunstan's Hospital. The sum bequeathed to the Montrose Infirmary is understood to be considerable.

## SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENTS.)

*Public Health Congress.*

DELEGATES from all over the Union of South Africa gathered on Nov. 24th at the Scientific and Technical Club, Johannesburg, for the second annual Public Health Conference. Dr. Ernest Hill, the medical officer of health, East London, presided, and many interesting communications were made.

*Municipal Milk Control.*

Durban is at the present time in the throes of controversy over the new draft Milk By-laws. The dairy-keepers declare that these by-laws will bring their ruin, and contend with some reason that the milk-supply of Durban is not inferior to any in the world. The whole subject of milk control was dealt with by Dr. S. J. Clegg, formerly deputy M.O.H. for Newcastle-on-Tyne and now M.O.H. for Durban, at the Johannesburg Congress. The dairy inspector, Dr. Clegg contends, is not to be regarded as a policeman. The sanitary conditions of Natal are good, and the milk by-laws in South Africa generally already in advance of those in force in England and Wales. Everything turns on the firm and sympathetic administration of these by laws. Medical opinion at the Congress was, on the whole, in favour of pasteurisation, although recognising the value of raw milk.

*Plague in South Africa.*

A conference on plague, called by the Minister of Health of the Union of South Africa, was held at Bloemfontein on Nov. 13th under the presidency of the Minister of Health, the Hon. D. F. Malan.

The Minister, in his opening address, recalled that it was over 20 years since plague had been first introduced into South Africa, and referred to the fact that in India since its reintroduction in 1896 11 millions of persons had perished from the disease in that country. The Government had decided to increase their grant to the South African Institute for Medical Research with a view to further research on the subject, and to equip a mobile field laboratory. The elevator system of handling grain was proving a blessing in this connexion, but a year or two would elapse before it was in full operation. Dr. J. Alexander Mitchell, Secretary for Public Health and Medical Officer of Health for the Union, reviewed the ætiology of plague, its history, and the present position of the disease in the country, giving a table of its regional and colour distribution for the last 24 years. In 1924 the districts concerned included Albert, Colesberg, Bloemfontein, Boshof, Brandfort, Bethulie, Hoopstad, Kronstad, Lindley, Senekal, Heilbron, Philippolis, Smithfield, Winburg, Wolmaranstad, and Krugersdorp. The incidence so far recorded this year was 51 whites with 27 deaths, and 303 coloured with 195 deaths. No definite evidence was obtained as to what agency was keeping the infection alive, but veld rodents were suspected. In 1920 an investigation into the rodents and small animals in the affected districts was begun by Mr. Austen Roberts, naturalist to the Pretoria Museum, and Mr. Powell, an expert tracker and trapper. In February, 1921, a farmer in the Kronstad district sickened and died of plague. He had been in the habit of taking a mid-day siesta under a clump of bush near his farm, and a large colony of gerbilles and multimammate mice were found close by this, thoroughly infected with plague, and several dead bodies of the animals were found on the surface of the ground. Since then the existence of widespread plague infection of veld rodents had been demonstrated. It was regarded as probable that the present outbreak was the result of the recrudescence of plague infection amongst wild rodents that had been acquired by them during the plague prevalence of 1900–05. The infection had been found most commonly in the gerbille, which was

a purely nocturnal animal, rarely seen by man, and rarely or never entering dwellings. The other animal principally affected was the multimammate mouse, which lived sometimes in gerbille burrows and sometimes in dwellings or outhouses, taking the place of the domestic mouse in these districts. The area in which the veld rodents were infected with plague measured 50,000 square miles. The growth of the rodent population had been greatly encouraged by the destruction of their natural enemies, the jackals, lynxes, and cats, the clearing of bush which used to harbour owls and hawks, and the great development of mealie growing. During the epizoötic certain areas were kept free from rodents so as to form "plague fire-belts." These held good for a time, but later the infection spread around them.

Having set out the existing situation, Dr. Mitchell discussed future risks in regard to local spread, spread to the large towns, and spread overseas, and in the discussion after his address the main conclusions arrived at were the following: (1) That persistent and well-organised propaganda should be undertaken with a view to enlightening farmers and others as to the mode of spread of plague and the means of combating it. (2) That scientific research into the problem involved should be undertaken and subsidised. (3) That the number of expert rodent inspectors and demonstrators should be increased. (4) That all buildings should be made rat-proof, so as to "build out" the rodents. (5) That plague-carrying rodents on farms should be controlled and limited in numbers. (6) That the natural enemies of these rodents should be protected and fostered. (7) That by the use of grain elevators and the rat-proofing of grain stores precautions should be taken against conveying rodents from infected areas. (8) That vigilance committees should be formed in infected areas to institute and coördinate measures for dealing with plague and rodents.

*The First Doctors Trained in the Transvaal.*

Johannesburg has this year, for the first time, produced its own doctors. The medical students of the Witwatersrand University recently held their final examination, when the four successful candidates out of an entry of 13 were Messrs. B. I. Kany, L. Klein, G. F. Slade, and G. C. Thompson. It is understood that all these recently qualified men will shortly take up appointments at the Johannesburg General Hospital.

A dinner in honour of the Faculty of Medicine of the Witwatersrand University was given by the final year students at the Trocadero, Johannesburg, on Nov. 15th. Mr. C. Duthie presided, and among those present were Sir William Thomson (Principal of the University); Dr. A. J. Orenstein, President of the local branch of the British Medical Association; Prof. J. M. Watt, Dean of the Faculty of Medicine; and Dr. R. P. Mackenzie, superintendent of the General Hospital.

*The Leprosy Committee.*

The Minister of Public Health (Dr. Malan) has appointed a leprosy committee to consider and advise the Union Government regarding leprosy research and other matters relating to leprosy in the Union. The personnel of the committee is as follows: Dr. J. A. Mitchell (Secretary for Public Health and Chief Health Officer), chairman; Dr. W. Watkins Pitchford (Director, South African Institute for Medical Research, Johannesburg) or his deputy; Prof. A. W. Falconer (Professor of Medicine in the University of Cape Town); Prof. O. K. Williamson (Professor of Medicine in the University of the Witwatersrand); Dr. A. Pijper; Dr. F. C. Willmot (Assistant Government Health Officer); and Dr. G. W. Robertson (Government Pathologist).

*Medical School for Natives.*

At the last meeting of the Council of the South African Native Conference, held at Alice, Cape Province, the question of a medical school for natives was discussed at some length. The principle of erecting such a school in connexion with the College has already been adopted and approved by the Union Government, and classes for the first year of the course will be opened in 1925. In this connexion the appointment of Mr. J. Macdonald, M.A., of Greenock, as lecturer in botany and zoology was confirmed.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

*"Impregnation" by the First Husband.*

A CURIOUS case of insanity which has recently occurred has started Parisians discussing a very old problem. A man married a widow by whom he had a son, and in this son the second husband found more and more points of similarity to the first husband who had been dead some five years before the child's birth. The idea that this child was born "impregnated" by the mother's first husband became fixed in the mind of the second husband, who spent his time comparing the gestures and features of this child with those of the alleged "impregnator." This retrospective and, as the Parisians call it, "uterine" jealousy, provoked its victim to acts of violence, necessitating curtailment of his personal liberty. Cases such as this are not unknown to alienists, and less interest attaches to the incident itself than to the discussions to which it has given rise. What, it may be asked, does even the average educated man of the middle classes know of the modern teachings about such matters? To put the matter crudely and concretely, what would a gentleman farmer say if a thoroughbred bitch were mated with a mongrel dog and a year later with a thoroughbred? Would he be able to say definitely whether the second litter would show no evidence of its mother's previous mesalliance? The fact of the matter is that the "knowledge" of the man in the street, not to mention the man in the country, is biblical and traditional rather than Mendelian in this matter.

*Virisection Filmed.*

Thanks to the initiative of Mr. Desvaux, who is on the Municipal Council, credits have been voted for the preparation of six educational films showing some of the lessons to be taught by vivisection. Recently one of these films was demonstrated by Dr. Laugier, Prof. Lapicque's assistant, and the spectators collected in one of the amphitheatres of the Sorbonne followed with great interest a film showing a dog being operated on under a general anæsthetic. It is hoped that this and similar films will prove of considerable educational value to students of medicine, and that this device will *ipso facto* reduce the number of operations performed on animals for teaching purposes. A committee of physiologists has taken part in the preparations of these films, the technical details of which must have strained the ingenuity of even the best cinema experts. The first films will assuredly not prove to be technically perfect, and even when they become so, if this ever happens, it is doubtful if their teaching value will be great.

*The Anti-venereal League.*

A general meeting of the National League against Venereal Diseases was held recently in the large amphitheatre of the Faculty of Medicine in Paris. Mr. Le Beau, Councillor of State and Director of Public Hygiene, was in the chair, representing the Minister of Public Hygiene; representatives were also present for the Minister of War and the Cardinal Archbishop of Paris. Alongside Dr. Jeanselme, President of the League, were seated delegates from the French Red Cross, from the International League of the Red Cross, and from the International Union against Venereal Disease. Dr. Jeanselme outlined the work of the League during the past year, and Mr. Le Beau then detailed the present position of the

campaign in France. The financial credit accorded to the League was, he said, insufficient for the work it did. Dr. Queyrat gave a lecture on the organisation of the fight against syphilis, and the meeting concluded with a demonstration of a cinematographic film entitled Syphilis, the Social Scourge.

*Communal Vitality.*

It is laid down in French law that when the mortality-rate for any one commune exceeds for three consecutive years the average mortality-rate estimated for the whole of France, special steps must be taken to deal with factors causing such unsatisfactory state of local public health. Dr. René Martial pointed out recently to the Academy of Medicine that this formula was somewhat rudimentary, on the grounds that, even if there is a direct relationship between the mortality-rates and the health of a commune, this relationship may vary greatly, nor does it constitute the only indication of health conditions in the commune. In fact, the mortality-rate may be normal, whereas the actual conditions of life in the commune are very unhealthy. The health conditions of a commune should not, therefore, be assessed by the mortality-rate alone. The assessment should be based on a knowledge of the morbidity of the commune from the individual point of view as well as from the collective standpoint. This view-point gives due proportion to health and social aspects, and allows a proper appreciation of the vitality of the commune. Further, it is of great practical importance, as to reduce the mortality-rate—a relatively easy matter—is alone not enough. To this conception of the racial characteristics of the commune coupled with living conditions, Dr. Martial gives the name of communal vitality.

## BERLIN.

(FROM OUR OWN CORRESPONDENT.)

*Jubilee of the Deutsche Medicinische Wochenschrift.*

THE *Deutsche Medicinische Wochenschrift*, commonly called *D.M.W.*, has recently celebrated the fiftieth anniversary of its birth. The journal was founded in 1874 by the late Dr. Börner, of Berlin, and from the beginning it differed from other journals of the time in that, apart from scientific articles, it dealt extensively with hygienic, social, and professional questions. When Dr. Börner died in 1885, his journal had already obtained a firm footing, and under his successor, Dr. Gutmann, its position was further strengthened by the fact that one of its most distinguished contributors was the late Prof. Koch, who contributed his fundamental articles on the tubercle bacillus, tuberculin, and the cholera bacillus in the *D.M.W.*; also the articles of Prof. v. Behring on the diphtheria bacillus and on diphtheria antitoxin appeared in that journal. Dr. Gutmann died in 1893, after eight years in the editorial chair, and his successor was the well-known Prof. Eulenburg, with Dr. Schwalbe, then a young man, as co-editor. Prof. Eulenburg retired from the *D.M.W.* in 1903 to devote himself exclusively to his great standard work, the "Realencyclopedie der gesammten Heilkunde," and Dr. Schwalbe is now sole editor. The works of Prof. Ehrlich on chemotherapy, of Prof. Wassermann on immunisation, and of Prof. Bier on regeneration appeared in the *D.M.W.*, where also the first Röntgen photograph of a hand was published in 1895. During the war the journal was thinned down to about half its former size—from 1352 pages per half-yearly volume to 778—but in the past five years the *D.M.W.* has regained its full vigour and will certainly continue to be one of the leading medical journals of the world. On the occasion of the jubilee a special number has been published, containing a history of the journal, together with articles written by leading medical men on the development of medicine and its branches and on the history of the medical profession in Germany during the past 50 years.

*Juvenile Coronary Sclerosis.*

Before the Berlin Medical Society Prof. Klemperer described a case of sclerosis of the coronary arteries in a girl, aged 13 years. In the history of the case measles, varicella, and an attack of hæmaturia five months previously were recorded. The patient was brought to hospital in September for dyspnœa, general debility, and sleeplessness; examination showed bilateral dilatation of the heart, murmurs at the mitral valve, swelling of the liver, œdema, and cyanosis. Slight albuminuria and cylindruria were stated to be present. After ten days the condition became suddenly worse, pericardial frictions were heard, and radiography revealed a pericardial effusion. Under cardiac tonics there was a temporary improvement only and the child died with increase of œdema, dyspnœa, and anuria. The post-mortem examination findings were somewhat surprising; there was a large hæmopericardium, caused by a rupture of the heart over the apex of the left ventricle which proved to be aneurysmal. The coronary arteries showed sclerosis and fatty degeneration of the intima, the lumen being obstructed by thrombosis. Sclerosis was further present in the aorta, the subclavian and the carotid arteries and in the arteries of the brain. Cases of arterio-sclerosis in children have been observed in a few instances as an accidental symptom, but the special feature of this case was that the sclerosis of the coronary arteries was primary and had led to a rupture of the left ventricle.

*The Battle of the Clubs.*

While the battle of the clubs described in these columns has come definitely to an end in the greater part of Germany with the retention of the free-choice system, in Berlin the position is only that of an armistice. Notwithstanding this armistice, the Berlin clubs continue to take measures which are detrimental to the interests of the profession. They have established surgeries of their own and pretend that these surgeries are more comfortable, in a better hygienic condition, and better provided with modern apparatus than the consulting-rooms which the medical men use to attend their club patients. In these surgeries the medical attendants are full-time medical officers appointed with a fixed salary, who by their contracts with the clubs have renounced the right of private practice. It is obviously the aim of the clubs to spread the system of surgeries owned by the clubs and worked by full-time medical officers, who in this way are totaly dependent on the goodwill of the club boards. The medical profession have protested against these measures as being contrary to the terms of the armistice. They point out that it is not by new apparatus and lavishly furnished consulting and waiting rooms that a patient is cured but by the skill of the medical attendant. Proceedings before a court of arbitration have not given a decisive result and the Government has kept a neutral attitude toward that important question. At a great protest meeting held in the town-hall of Berlin, in the presence of representatives of the Government, the medical faculties of the German universities, and the leading medical societies, a resolution was passed that the independence of the medical profession was absolutely necessary for the welfare of the nation.

*Death of Prof. Trendelenburg.*

The death is announced of Friedrich Trendelenburg, one of the most celebrated surgeons of the old school in Germany. He was born in 1844 in Berlin, a son of the renowned professor of philosophy at the university, who was a fervent antagonist of Hegel's doctrine. He studied medicine in Berlin and on qualification he went for post-graduate study to Glasgow and to Edinburgh. He then became an assistant to the great surgeon, Prof. Langenbeck, in Berlin, and in 1874 was appointed chief surgeon to the newly opened municipal Friedrichshain Hospital in the capital. Having held that office for one year only, he became ordinary professor of surgery at the

University of Rostock and then at Bonn. In 1895 he succeeded the late Prof. Thiersch as professor of surgery in Leipzig, where he lived until 1912. In that year he retired to his native city to enjoy there an otium cum dignitate in one of the fashionable suburbs. His work concerned operations on the larynx and the abdomen; the Trendelenburg tampon cannula devised by him to prevent blood from entering the lung after tracheotomy, and the Trendelenburg position for laparotomies will connect his name for ever with the great progress of surgical technique. Other works of his concerned operations for strictures of the œsophagus and cancer of the stomach. After his retirement from office he wrote a history of the German Surgical Association, of which he had been president, a work which was in fact a history of general surgery during the past 50 years.

## NATIONAL HEALTH INSURANCE.

### APPEALS FROM MINISTERIAL DECISIONS: THE NEW RULES.

PROVISIONAL rules have been drawn up by the Rule Committee of the Supreme Court for regulating appeals and references to the High Court under the National Health Insurance Act, 1924. The proposal involves the repeal of Rules 1–11, both inclusive, of Order LV, B and the substitution of the following rules and title:—

NATIONAL HEALTH INSURANCE ACT, 1924.

1. An appeal under Section 89 of the National Health Insurance Act, 1924, from a decision of the Minister of Health shall be instituted in the King's Bench Division of the High Court of Justice by originating notice of motion.

2. Any person who is aggrieved by, and is desirous of appealing against, a decision of the Minister of Health may, within 21 days from the date of the decision, or within such further time as the Minister may allow, by notice in writing addressed to the Minister, stating the grounds of his appeal, require the Minister to state a case setting forth the facts on which his decision was based, and his decision thereon, and the Minister shall, as soon as may be, state the case and send it by registered post to the person aggrieved. A case stated by the Minister shall be signed by him or by such person as he may authorise in that behalf.

3. An originating notice of motion shall be filed in the Crown Office at the Royal Courts of Justice within 21 days of the despatch of the case, or within such further time as the Court may allow, and the notice of motion shall at least 21 days before the time fixed by the notice for making the motion be served upon the Minister and, together with a copy of the case, upon every party to, or person served with notice of, the proceedings before the Minister. The notice of motion shall be in the form No. 18B set out in Part II. of Appendix B, and shall state the grounds of the appeal. The case shall be entered in a list to be kept at the Crown Office for that purpose.

4. Proceedings on a reference of a question under proviso (iii) to Section 89 (1) of the National Health Insurance Act, 1924, by the Minister of Health to the High Court for decision shall be instituted in the King's Bench Division by originating notice of motion in the form No. 18C set out in Part II. of Appendix B. The notice of motion shall be filed in the Crown Office at the Royal Courts of Justice and shall be entered in the list referred to in the last paragraph.

5. The Minister shall state the question referred by him to the Court, together with the facts relating thereto in a case stated and signed in the same manner as on an appeal.

6. The Minister shall serve the notice of motion, together with a copy of the case, upon the person or one of the persons as between whom and the Minister the question has arisen, at least 21 days before the time fixed by the notice for making the motion.

7. Upon the hearing of an appeal or reference the Court shall have power if it thinks fit to amend the case or to order the case to be sent back to the Minister for amendment or to receive further evidence.

8. The Court in all cases of appeals or references shall have power to draw inferences of fact from the facts set forth in the case, and shall determine all questions arising thereon, and in all cases of appeals shall have power to reverse, affirm, or amend the decision appealed against or to make such other order as it may think fit, including any order as to costs.

9. The decision of the Court on an appeal or a reference shall be embodied in a certificate to be signed by the judge at the hearing and the original thereof shall be filed in the Crown Office and a copy thereof sent by the Crown Office to the Minister of Health and to the parties appearing at the hearing of the appeal or reference respectively.

10. The ordinary practice and rules of the King's Bench Division shall in so far as the same are applicable and are not inconsistent with this Part of this Order apply to proceedings under this Part of this Order.

11. Nothing in this Part of this Order shall be construed to affect any right vested in the Crown by virtue of the Royal Prerogative.

(New forms of notices of motion are set out in an appendix to take the place of the old forms 18B and 18C which are annulled.)

These Rules, which may be cited as the National Health Insurance (Procedure on Appeal) Provisional Rules, 1924, will come into operation as from Jan. 1st, 1925. The Rules are dated Dec. 16th, 1924, and are signed by Viscount Cave (Lord Chancellor), Baron Hewart (Lord Chief Justice), Sir Ernest Pollock (Master of the Rolls), Sir Henry Duke (President, P.D. & A. Division), Lord Justice Sargant, Mr. Justice Sankey, Mr. Justice Roche, Mr. Justice Lawrence, and the following well-known barristers, Mr. T. R. Hughes, Mr. E. W. Hansell, Mr. C. H. Morton, and Mr. Roger Gregory. They may be obtained from H.M. Stationery Office, price 1*d*.

## ENCEPHALITIS LETHARGICA IN MANCHESTER.

Dr. W. St. C. McClure, of the Public Health Office, Manchester, has prepared a special report on this disease in Manchester during 1924. It attacks young people especially; the mortality is heavy, and in many of the survivors the disease is progressive and destructive. During the nine months ending Sept. 30th, 1924, 263 persons were reported to be suffering from this disease in Manchester, and 230—122 males and 108 females—after investigation were accepted as true cases. Persons of all ages were attacked, but the incidence fell most heavily upon those under the age of 21 years; 24 males and 19 females died. No particular occupation influenced the spread of the disease. This evidence obtained during this epidemic does not support the view that there is a direct association between an outbreak of influenza and this disease. As to the frequency of certain symptoms, vomiting occurred at the beginning of the illness in about 10 per cent. of the cases and headache in 36 per cent. Pronounced lethargy with or without nocturnal insomnia was present in 70 per cent. Insomnia and delirium without lethargy was a marked feature in about 30 per cent. of the cases. Paralysis of one or more cranial nerves occurred in 40 per cent. Double vision was complained of by 101 persons, or about 44 per cent. of the total, and in addition 18 persons complained of hazy vision. Nystagmus was noted in 10 per cent. Spasms and twitchings occurred at the beginning of the illness in 31 per cent.; hiccup in eight cases. The outstanding feature of the epidemic was the frequency of diplopia as a symptom of onset. In a considerable number, diplopia and some drowsiness were the only symptoms displayed. Of the 230 cases, 102 were removed to Monsall Hospital, 60 were treated in other institutions, and 63 were nursed at home. The duration of stay in Monsall Hospital of non-fatal cases varied from 14 to 104 days, the average being 38 days. As to the sequelæ, it is too soon to determine the end-results of the illness upon those attacked during the present year. Of 55 survivors whose illness began at least six months ago, 19 have been recorded as totally incapacitated, 26 as partially incapacitated, and 10 as recovered. There were 50 cases in the years 1920–21. Of these, 28, or 56 per cent., died. Examination has recently been made of the 22 survivors, and it has been recorded that five were totally incapacitated, the disease rapidly progressing towards complete helplessness; four were able to do housework only, and 13 were able to follow their employment or attend school, though not all of them had completely recovered. Complete recovery was noted in seven cases.

# Public Health Services.

## REPORTS OF MEDICAL OFFICERS OF HEALTH: A BRIEF SURVEY.

THE usual circular has been issued by the Ministry of Health with regard to these reports. The circular points out that the annual report for the year 1924 will be an ordinary report, but that the report for 1925 will be a survey report, in which the medical officer will be expected to deal comprehensively with the progress made in his area during the preceding five years, with the extent and character of the changes made during that period in the public health services of his area, and with any further action in the development of the public health services contemplated by the local authority or considered desirable by the medical officer himself.

We have commented at some length in previous issues on the reports of medical officers of health for 1923. This year was noteworthy both for the lowness of the death-rates from all causes and the low infant mortality-rates which were the rule. Owing to the comparative absence of influenza the death-rates from the respiratory diseases were considerably lower than in 1922. The reports generally showed that the introduction of the Milk Designations Order had stirred up considerable interest in the milk problem. In many districts there were clean milk competitions which secured the coöperation of dairy farmers in the production of a clean milk-supply. The reports from the districts where the milk clauses are in operation do not, however, indicate any lessening in the proportion of tuberculous milk. Prof. J. B. Buxton, F.R.C.V.S., dealt with this matter in an interesting paper read before the Farmers' Club on Dec. 8th, 1924. He showed that there was no reason to suppose that the prevalence of bovine tuberculosis or the frequency of tuberculous udders had in any way lessened in recent years, and he made out a strong case for the reintroduction of the Tuberculosis Order of 1914 or some amendment thereof. In the discussion which followed Prof. Buxton's contentions were not gainsaid.

The particulars which medical officers are asked to supply for 1924 are, in general, similar to those asked for in previous years. One of these is the number of women dying from the effects of childbirth. Study of the 1923 reports suggests the continued need for more uniformity in the classification of these deaths. At the present time England compares unfavourably in this respect with Scotland and many continental countries. The Scottish Departmental Committee made a recommendation that representation be made to the International Committee concerned with the classification of causes of death with a view to securing uniformity of method as well as of nomenclature in compiling official statistics of puerperal deaths. In addition to the variation of method as between one country and another, there is no uniformity when comparison is made between the various districts in England and Wales. For example, the figures given by the Registrar-General differ considerably from those given by the medical officers for the same districts concerned. No doubt the method of classification accounts for the difference. It is natural for the local medical officer to wish his district to appear in a favourable light as regards maternal mortality, but the Registrar-General is rather in the position of an impartial umpire whose decision is final.

Full particulars of the effect on vision resulting from ophthalmia neonatorum are asked for by the Ministry; a perusal of past reports shows that such particulars are frequently not supplied in full with the result that the extent of the damage done by this disease year by year remains unrevealed. The reports for 1923 did not indicate any progress in housing matters, rather the reverse.

## OPHTHALMIC BENEFIT FOR MEMBERS OF APPROVED SOCIETIES.

ONE of the subjects before the Royal Commission on National Health Insurance now sitting is the best way to dispose of the surpluses which some of the approved societies possess and which are available for the granting of certain additional benefits to their members. There are 18 of these "additional benefits," and according to an official statement prepared for the use of the Commission and already published as a Blue-book [1] the most popular of the additional benefits, next to dental treatment, is the so-called "optical benefit." For the year 1924 nearly £40,000 is available for it. In one very large society, already, the claims have numbered 500 a week. A "model schedule" provides that "payment in respect of the cost of an optical appliance shall only be made on the production of a prescription from a qualified practitioner or a hospital." In some instances, says the statement, and in particular in rural districts, it has been found that to insist on this condition is impracticable and its strict enforcement has been relaxed. If we may believe a writer in the *Optician*, as a matter of fact, all the largest approved societies (and many of the smaller ones) send their members to an optician, and not to a qualified practitioner or a hospital. Whether or not this statement of the case requires qualification, there is, at any rate, sufficient truth in it to demand the attention of those medical bodies whose duty it is to have regard both to the professional interests of their members and to the preservation of the nation's eyesight. Three such bodies exist and are at present jointly concerned in considering the various problems under review with the object of ensuring that the model schedule of the Ministry of Health, just quoted, which at present, unfortunately, is in danger of becoming a dead-letter, may become really effective. The first of these three bodies is the Council of British Ophthalmologists, formed in 1918, representative of the Ophthalmological Society and the Ophthalmological Section of the Royal Society of Medicine; the second is the Ophthalmic Committee of the British Medical Association, and the third is the "Ophthalmic Benefit Committee," which has been formed during the past year, membership of which is open to those who hold or have held posts as surgeons, assistant surgeons, clinical, or refraction assistants at the ophthalmic hospitals or general hospitals with ophthalmic departments, and are in regular ophthalmic practice. The chairman of this Committee is Mr. H. L. Eason, senior ophthalmic surgeon to Guy's Hospital. It is understood that the aims of these three bodies with regard to the matter at issue are in perfect harmony.

Last spring a joint committee was formed by the first two bodies, which drafted a scheme for ophthalmic benefit, and this committee has now agreed to allow equal representation to the Ophthalmic Benefit Committee in any approach to the Ministry of Health and in considering the various problems under review. It is proposed that a list of ophthalmic medical practitioners qualified and willing to see insured members of approved societies should be prepared in accordance with the following principles. Anyone desiring to join in the scheme will have to furnish evidence (*a*) that he has held hospital or other appointments affording special opportunities for acquiring special skill and experience of the kind required for the performance of the service rendered, and has had actual recent practice in performing the service rendered or services of a similar character; or (*b*) that he has had special academic or post-graduate study of a subject which comprises the service rendered, and has had actual recent practice as aforesaid; or (*c*) that he is generally recognised by other practitioners in the area as having special proficiency and experience in a subject which comprises the service rendered.

[1] Appendix to Minutes of Evidence, Part I. Statements prepared by certain Government Departments. H.M. Stationery Office. 8*s*. 6*d*.

We understand that in the opinion of the three bodies there will be no difficulty in providing a satisfactory ophthalmic service on these lines. At one time it was thought that this could only be done in London and in the larger towns, but with the development of school clinics and duties in connexion with the Ministry of Pensions, ophthalmic surgeons are arranging not only to have their consulting-rooms at these larger centres where they are usually engaged in some capacity in the ophthalmic departments of the hospitals, but they visit, periodically, minor centres, and as soon as the demand is apparent there is little doubt that the supply will be equal to it. This is the first essential. The second is of at least equal importance—that the standard of work should be maintained at a high level. At a recent meeting of the Ophthalmic Benefit Committee, three members representing the North of England Ophthalmological Society were elected on to the executive, the conditions on which they agreed to serve meeting with general approval. They were as follows: (1) That there should be no lowering of the standard of work of ophthalmic surgeons, but that, on the contrary, it should be rendered more highly efficient; (2) that there should be an adequate fee for those taking part in the service; and (3) that their society should be responsible for the organising of the work in their area. A note in the supplement to the *British Medical Journal* for Dec. 13th states that the Medical Secretary would be glad to receive the names of medical men habitually doing ophthalmic work and complying with the conditions already mentioned, whose names are not already in the list, and who are willing to do the work. This list, the note states, can be supplied to the approved societies on application. An agreed fee of one guinea for each completed case of refraction has been mentioned, and it is believed that this would prove generally acceptable. At present the most urgent necessity is to demonstrate to the Ministry of Health that there are enough men and women in the medical profession competent and willing to do this work. To this end further names should be sent without delay, either to the Medical Secretary of the British Medical Association or to the Secretary of the Ophthalmic Benefit Committee at 30, Finsbury-square, London, E.C.

## GOVERNMENT COMMITMENTS IN PUBLIC HEALTH.

DURING the last three days of the short December session a number of questions were put to Ministers which covered a wide range of public health matters. The replies are here briefly set out.

*Housing.*—Mr. Neville Chamberlain admitted that figures were not available to show how many houses there were still inhabited which had been condemned, and which had not been closed because the occupants were unable to find other accommodation. He added: "According to the reports of medical officers for 1922–23, representations were made during the year with a view to closing orders in respect of 3155 houses. Orders were made in respect of 2331 houses, and in 640 cases orders were determined after works of repair had been carried out. In the same period repairs were secured in the case of 542,834 houses as a result of the intervention of local authorities."

Asked if the Government would offer assistance and encouragement to builders of blocks of hygienic self-contained flats of a low rental value, and thus meet the needs of a district like Hackney where the only available spaces of building were those to be obtained by the clearance of slums, Sir Kingsley Wood (replying for the Minister of Health) said: "Assistance is available, both by way of loans and subsidy, under the existing Acts of 1923 and 1924, for the building of self-contained flats, and my right hon. friend will be glad to consider any such proposals submitted to him by local authorities, whether as part of schemes for the clearance of insanitary areas or otherwise. Blocks of flats have already been erected, or are proposed to be erected, with Government assistance, in London and elsewhere."

*Tuberculosis.*—The Minister of Health, questioned as to the necessity of the further extension of the scheme of village settlements in the neighbourhood of large cities and towns for tuberculous persons and their families, replied (through Sir Kingsley Wood): "The provision of additional accommodation at the existing village settlements for tuberculous persons and their families is already in progress. The Minister does not propose to consider further extensions until more experience is available as to the value of this particular method of dealing with the problem."

*Silicosis.*—The Home Secretary, asked to state the number of deaths which had taken place in Sheffield among cutlery and other grinders during the last ten years, replied: "According to figures supplied by the medical officer of health for Sheffield, the total number of deaths among cutlery and other metal grinders in Sheffield during the ten years 1914 to 1923 was 1136, of which 524 were due to pulmonary tuberculosis, silicosis, or other fibroid disease. These figures give two deaths as due to silicosis unaccompanied by tuberculosis, but do not distinguish between cases of tuberculosis combined with silicosis and cases of tuberculosis unaccompanied by silicosis. The average age at death varies between 45·9 in 1918 and 52·9 in 1920."

*Maternal Mortality in Childbirth.*—Lieut.-Colonel Fremantle asked the Minister of Health if he would state what further steps he proposed to take with a view to reducing the exceptional maternal mortality in rural and in textile and coal-mining areas respectively; and whether, in the event of its not being regarded as the duty of the medical officer of health to investigate all maternal deaths due to childbirth and all cases of puerperal fever, whether fatal or not, he would take steps to make good these omissions.—Sir Kingsley Wood referred Colonel Fremantle to the circular on the subject of maternal mortality, which was issued by the Minister of Health on June 30th last and continued: "Attention was drawn in the circular to the need for investigating all maternal deaths due to childbirth, and all cases of puerperal fever, and the local authorities were urged to take action with a view to reducing the risk involved in childbirth. It is proposed to await the results of the issue of this circular before considering further action."

In answer to a further question on the same subject Sir Kingsley Wood replied: "In 1923 there were 2892 deaths of women classed to pregnancy and child-bearing, or a ratio of 3·81 per 1000 births. The average annual numbers of deaths so classed in the years 1891–95 (the nearest available figure to that asked for in the question) represented a rate of 5·49 per 1000 births. The figure is, however, based upon the more restricted classification then in use; and the comparable deaths for 1923 represent a rate of 3·6, showing a decrease of mortality during the period in question by 34 per cent. During the same period the death-rate from all causes of females aged 15 to 45 years has declined by 45 per cent."

*Diphtheria Prophylaxis.*—Mr. Broad asked the Minister of Health whether he was aware that in the town of Dallas, Texas, in the year 1919, 10 children were killed and over 60 others injured by toxin-antitoxin, administered in connexion with the Schick test for diphtheria; whether a similar disaster which occurred in Vienna recently, when several infants were killed by an injection of toxin-antitoxin, had been brought to his notice; and whether, in view of the possibility of serious injury, and even death, resulting from the use of toxin-antitoxin, he would discontinue the issue of circulars by his department in favour of the extension of the Schick system to workhouse children.—Mr. Neville Chamberlain replied: The answer to the first two questions is in the affirmative. As regards the third, I am advised that these regrettable

occurrences appear to have been due to unskilled technique or the use of unstandardised matter. The necessity of great care in these respects is emphasised on p. 54 of the Report of the Chief Medical Officer of the Ministry of Health for 1923. In all the circumstances I do not think it necessary to take any action as to the memorandum (68/Med.) issued on this subject by the Ministry in 1922, which the hon. Member will see is not confined to Poor-law institutions but has general reference to residential schools and institutions.

## HOSPITAL NOTES.

ARTIFICIAL SUNLIGHT FOR LEEDS.—Leeds General Infirmary, which claims to possess the largest X ray department in the kingdom, still lacks the means of giving "artificial sunlight" treatment, and the need is emphasised by the recent acquisition of a first-rate apparatus by its neighbour, Harrogate, and by the fact that other institutions in the city are already provided. The infirmary is too heavily in debt to be able to incur the cost—estimated at not less than £1000—to make a modest beginning, and a movement is on foot in Leeds to provide the money.

THE NEW BETHLEM HOSPITAL.—It has now been definitely decided to remove Bethlem Hospital from the Lambeth-road, where it was established in the year of Waterloo, to a site at Shirley, near Croydon. An estate of 340 acres has been purchased with amenities which, says Alderman Sir Charles Wakefield, the President, can be "conserved for all time." Deputations of officials and governors are to visit the leading mental hospitals in England and other countries, and perhaps America, to familiarise themselves with modern curative methods which it is impossible to adopt with any fullness in the present unsuitable buildings and still more unsuitable surroundings.

GOVERNMENT HELP FOR VOLUNTARY HOSPITALS.—Speaking at a Mansion House meeting of the Metropolitan Hospital Sunday Fund, Mr. Neville Chamberlain, the Minister of Health, emphasised the importance of maintaining the voluntary system, and added that he hoped, if he remained sufficiently long in his present office, to "do something to put the matter on some satisfactory and permanent footing." The £39,724 collected on Hospital Sunday is a decrease of £3443 on the previous year, a falling-off which Mr. Holland-Martin, the Chairman of the Finance Committee, attributed in part to the growth of the "week-end" habit.

## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 20TH, 1924.

*Notifications.*—The following cases of infectious disease were notified during the week—namely, small-pox, 76; scarlet fever, 1673; diphtheria, 740; enteric fever, 53; pneumonia, 1006; puerperal fever, 38; cerebro-spinal fever 5; acute poliomyelitis, 10; acute polio-encephalitis, 2; encephalitis lethargica, 41; dysentery, 13; ophthalmia neonatorum, 83. There were no cases of cholera, plague, or typhus fever notified during the week. Of the 13 cases of dysentery, 2 were reported from Bristol, 1 from St. Albans R.D., 3 from Friern Barnet (Msx.), 3 from Woking, 3 from Reigate R.D., and 1 from Greetland (Yorks, W.R.).

*Deaths.*—In the aggregate of great towns, including London, there were 2 deaths from enteric fever, none from small-pox, 13 from scarlet fever, 33 from diphtheria, 84 from measles, and 82 from influenza. In London itself the deaths from diphtheria numbered 9 and from infantile diarrhœa 14.

ROYAL SOCIETY OF MEDICINE.—The next social evening of this society will be held at 1, Wimpole-street, London, W., on Monday, Jan. 19th, at 8.30 P.M., when the President, Sir StClair Thomson, will receive the guests, and at 9.30 P.M. Miss Lena Ashwell will give an address on the Drama as a Necessity of Civilised Life.

# Correspondence.

"Audi alteram partem."

## INTUBATION OF THE COMMON BILE-DUCT.

*To the Editor of* THE LANCET.

SIR,—The case of intubation of the common bile-duct for stricture recorded by Mr. Zachary Cope in THE LANCET of Dec. 6th, 1924, and the comment thereon by Sir Hugh Rigby are of great interest. Examples of stricture of the common duct are, unhappily, not rare. They are due to maladroit performance of the operation of cholecystectomy. Portions of the common duct, or of the common hepatic duct, may be removed; or the cystic duct may be divided so close to the common duct as to cause an inflammatory thickening around the ligature, to be followed in a few months by stenosis. I have operated on several such cases by various methods, and I have left a tube in the common duct on four occasions. There need be no anxiety, I think, as to the permanent retention of the tube within the duct if a little device adopted by me is followed. A special tube should be inserted. I have had some tubing made for this purpose, with a thicker wall and smaller lumen than is usual, and of a diameter equal to a No. 4 catheter. The tube is fixed into the duct by a single stitch of finest catgut (8 or 9 nought), and about 3 inches of it, guided, if necessary, by a stylet, are passed through the ampulla into the duodenum. The "Jutte tube" serves this purpose well. The constant passage of food through the duodenum and the contractions of the gut pull upon the tube lying free within it. By degrees the tube is loosened and the whole length of it escapes into the intestine. I have known the tube to be discharged by the rectum as late as eight weeks after its insertion, and as early as three weeks. In no case has it been permanently retained. Too long a retention would no doubt lead to incrustation of the tube, and to disasters consequent upon this condition.

I am, Sir, yours faithfully,

Leeds, Dec. 24th, 1924. BERKELEY MOYNIHAN.

## REX v. BATEMAN.

*To the Editor of* THE LANCET.

SIR,—As I have had several letters addressed to me on the above case, may I be pardoned for addressing you in the matter? It would appear to me that there has been an unfortunate miscarriage of justice in a case admittedly difficult for laymen to view in a proper perspective.

The prosecution sought to prove:—

(*a*) That gross negligence amounting to criminal negligence must have occurred in removing a uterus together with the placenta after confinement, and, if this were not proved to the satisfaction of the jury, that

(*b*) It was criminally negligent not to have removed the patient for operation after such an accident had occurred.

The prosecution further inferred that in not removing the patient, the doctor was actuated by the hope that she would shortly die when a certificate would be given and nothing more heard of the matter. This insinuation was indignantly denied by the defendant.

With regard to the two specific points (*a*) and (*b*), as a witness for the defence, I should like to put the point of view held by a practising obstetrician to the profession at large.

(*a*) It was admitted that the presentation in this case was a complicated one, either a transverse, or a complex one of head, foot, and cord. It was my opinion that a rupture of the uterus must have occurred during the version which was done to effect

delivery. It is well known that a rupture of the uterus may attain very wide dimensions quite out of proportion to the force used in producing such a rupture. The wider such rupture be, the less force would be required for a doctor, mistaking the edge of the rent for the edge of the placenta, to remove the uterus together with the placenta instead of the placenta alone.

(*b*) When such an accident has occurred it will be obvious to anyone with any surgical experience that to move a patient down four flights of stairs (such was the position in this case) to a hospital would have been to ensure her death in transit. It is very strongly my view that absolute rest was the only chance of recovery such a patient would have, and that in enjoining that rest the doctor in charge could not fairly be said to have accelerated the patient's death. Whether there was a more appropriate time for removal between the date of confinement and the actual time at which this particular patient was removed no one can say except the medical man in charge. The evidence of the family "that she seemed brighter" was put to the jury in this connexion—surely not a fair direction.

In addition I would state that the above medical evidence of obstetricians was not put to the jury at all, the only medical evidence submitted to them being that of a pathologist.

I am, Sir, yours faithfully,

London, W. J. BRIGHT BANISTER.

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*To the Editor of* THE LANCET.

SIR,—In some respects Dr. Bateman was particularly unfortunate. The charge of negligence crystallised itself at the trial into two main forms, as the judge's direction to the jury indicates. The two heads may have been regarded either as alternative or as cumulative. In view of the characteristically fair admissions of the professional witnesses for the Crown, it seems unlikely that the accused can have been convicted upon both heads. The collective mind of a jury is an inscrutable instrument. Under which head did it give its verdict? Or was there a sort of compromise due to a half-persuasion on each of the two heads? It is a pity that the jury was not asked (as would probably have been done in a civil action for negligence) to make specific replies to specific allegations of negligence.

It is even more unfortunate that the summing-up contained no express warning that Dr. Bateman was not being tried for anything that he said (or did not say) *after* his treatment of the poor woman who died. His failure was that he gave way to a natural impulse to conceal a tragedy which was irremediable. This was, perhaps, the one feature which the jury could grasp unaided in a case full of complex surgical technicalities. Was there not a danger that the jury, if inclined to find Dr. Bateman at fault here, might forget that he was not charged with loss of nerve but with malpraxis?

I am, Sir, yours faithfully,

Dec. 28th, 1924. A BARRISTER.

*** We publish elsewhere a full report of the summing-up of Mr. Justice Shearman in this case, which, it will be seen, follows the line fairly indicated by Dr. Bright Banister. The clinical side of this tragic case was not dwelt upon or explained to the jury. The jury never seem to have been informed of the strong medical support, that would have been forthcoming from obstetricians, to the view that immediate removal to the hospital for immediate operation might have meant immediate death; nor does it seem to have been explained to them that the size of a rent in the uterus is not dependent upon either the amount of force used or the extent of any miscalculation.—ED. L.

## CONJUGAL TUBERCULOSIS.

*To the Editor of* THE LANCET.

SIR,—In your issue of Dec. 13th Dr. S. Rowland courteously criticises some of the views expressed by me (THE LANCET, 1919, ii., 606). With several of his observations I entirely agree. No doubt the personal factor comes largely into consideration when one observer is deciding whether a patient should be considered tuberculous, and the almost mathematical accuracy provided by positive sputum results, death certificates, and autopsies, is far the most desirable statistical basis. But it is to be doubted whether such accuracy is to be obtained in a problem so intricate and many sided, and the attempt may lead us seriously astray. Nor is careful experimental work, which shatters so many scientific illusions, possible in this instance. If we had a few more St. Andrews Institutes (to my mind the greatest clinical advance of the century) they could solve the problem for us in three generations and might well prove that my views are mistaken; but for the present we have only opinion and statistics to lean upon, and I cannot yet see sufficient evidence to disprove my views.

1. As pointed out in my paper, not every consort was examined, and there is no doubt that those most willing to submit to examination were those who already suspected illness; nevertheless, more accurate work is possible when contacts are examined in the home, as they are in Devon, than when they have to attend a dispensary for the purpose.

2. To found conclusions on positive and negative sputum results may be misleading unless some definite standard of negativity is adopted. The question is very difficult unless the patient is under direct hospital observation. To give a patient a sputum outfit for him to send off, and on the result to write him down as negative, is most unsatisfactory—yet how often this is done. I have obtained a positive result at the twentieth examination, after six years' observation, in a patient whose main disability was, and still is, bronchitis and emphysema.

3. A positive sputum after infection announces the danger of death from tuberculosis and implies that we are dealing with a patient of low resistance; still more is this the case if deaths alone are counted. The majority of the consorts of tuberculous persons have higher resistance than their mate; moreover, it has often seemed to me that their resistance is increased by the repeated small doses they receive before the massive infection which occurs in the terminal phases of the illness.

4. How often one sees the spouse of a tuberculous patient wilting and coughing, with physical signs in the chest and yet no sputum, or a negative sputum. Most of these cases clear up quickly when given a chance, but if we are for this reason to regard them uninfected, it distorts our statistics and leads to wrong conclusions.

5. Personal resistance varies very greatly; we constantly see examples of this in different members of a household equally exposed to infection. The great majority of people fortunately possess a high resistance, and the tuberculous person is generally married to one of the great majority. It is only when by coincidence a member of the low resistance minority is married to another, similarly handicapped, that conditions are provided that may lead to inclusion in a positive sputum or death series.

6. Dr. Rowland rightly states that I attach more importance to the seed than to the soil, but I by no means deny the importance of the soil, or of such serious factors as worry and subnutrition. It is the soil factor, indeed, which prevents the marriage of tuberculous persons universally ending in disaster for the mate. For the children of working-class patients the position is disastrous enough, for my figures lead me to believe (THE LANCET, 1923, i., 11) that these children are seven times more likely to contract the disease than those of healthy parents.

7. I do not in any sense disbelieve in a widespread tuberculous infection in childhood, and would attribute 50 per cent. of adult cases to reactivation of this focus as the result of accident or adverse circumstances; but the childhood infection does not confer a prolonged immunity, and I regard the other 50 per cent. of adult cases as due to a reinfection. An experimental infection does not confer prolonged immunity in animals, and it seems more likely that the immunity of adults exposed to massive infection is due either to a congenital high resistance, or a smouldering infection of their own, which is indeed far from uncommon.

I am, Sir, yours faithfully,

Paignton, Dec. 15th, 1924. E. WARD.

## SUCTION IN SURGERY.

*To the Editor of* THE LANCET.

SIR,—I have been much interested in the correspondence which has followed Mr. N. C. Lake's article on this subject in your issue of Dec. 6th, 1924. For some years I have been using suction in my own department of aural surgery and in routine otological work in place of syringing, which is still too much in daily use and should long ago have been discarded in favour of suction.

It is remarkable to learn how largely suction has taken the place of syringing and mopping up in general surgery, especially in clinics and operating theatres in America, and particularly in the region of the abdomen. If there is one region in the body above all others in which suction is eminently applicable as a method of preparing the field of operation and clearing away blood, pus, and débris during operation it is that of the ear and its annexes. The intricate anatomical arrangements in the middle-ear and its accessory recesses are, indeed, favourable for rapid and extensive progress of bacterial activity. To syringe forcibly a discharging ear may have the effect of driving purulent outflow into deeply-seated and dangerous positions, such as the attic, aditus, mastoid antrum, and mastoid cells, and may even precipitate such an almost invariably fatal complication as septic meningitis. It is striking to know how many years ago syringing out the abdomen during operation was gradually dropped—in my student days it was the usual custom—in favour of mopping-out. It was considered correct to flush the abdominal cavity with gallons of warm fluid.

I think it was the study of this change from syringing to sponging in abdominal work that first induced me to reflect on the disastrous results that often followed forcible aural syringing in the presence of septic discharge. Now, again, the abdominal surgeons are once more in the van in abolishing mopping and syringing out and substituting suction. It will be well for aural surgery when a similar change-over becomes universally recognised and adopted. I have found in my own work in aural and nasal surgery that a thorough clearing of the region about to be operated upon by preparatory suction, and so securing a clear field for operation, is the best way to get a good result and avoid serious complications such as septic meningitis.

Suction is always safe and effective. The suction of all discharging ears is what I advocate and am anxious to see carried out by practitioners and nurses in all hospitals and children's clinics. From a large experience of its use in the case of patients of all ages, in both acute and chronic discharge, I have no hesitation in stating that at least 90 per cent. of all patients would recover with dry, hearing ears, and the necessity for any operation would be avoided, if syringing were abolished and suction substituted. My experience justifies me in maintaining that no septic ear—whether acute or chronic—should ever be operated upon until suction has had a fair trial—in acute cases for 48 hours, and in chronic cases for at least a month. The only exception to this statement would be where an acute case had been seen too late and an abscess had already formed in the mastoid region, in which case an operation would, of course, be imperative.

The easiest and simplest way to apply suction to the aural cavity is by attaching a short piece of rubber tubing to the nozzle of a medium-sized glass or larger metal syringe, inserting this into the ear and then drawing out the piston, when the purulent secretion is all sucked away. This can be done repeatedly until the ear is dry: it is just the opposite action to syringing with the precautionary addition of the rubber tubing. It is an advantage if this is done with the aid of a good bright reflected light. The more elaborate method, and, of course, more effective, is to use a motor suction pump with specially made fine pointed glass tubes, which, being bent in various directions, can under a good reflected light be inserted into the various recesses of the tympanic cavity up into the attic, back into the aditus, and down into the depressed floor of the tympanic recess.

These suction tubes, of various shapes and sizes, I have had made for me by Messrs. Allen and Hanburys, Wigmore-street.

I am, Sir, yours faithfully,

WM. STUART-LOW.

Wimpole-street, W., Dec. 22nd, 1924.

## CANCER STATISTICS AND STATISTICIANS.

*To the Editor of* THE LANCET.

SIR,—In your leading article of Dec. 27th on this subject you point out the paucity of accurate data on the incidence of malignant tumours in the areas Mr. F. L. Hoffman classes as "uncivilised," including India, with probably the oldest civilisation in the world. This deficiency I have attempted to remedy in the Finlayson lectures of the Faculty of Physicians and Surgeons delivered in Glasgow last month, which will appear in due course in the *Glasgow Medical Journal*, including an analysis of 1190 tumours I cut sections of at the Calcutta Medical College Hospital and 1000 from the records of St. Mary's Hospital, London, which revealed a slightly higher percentage of malignant tumours, including sarcomata, in the tropical area, instead of eight times as many in this "civilised" country, which Mr. Hoffman assumes in support of his theory of cancer causation.

I am, Sir, yours faithfully,

London, Dec. 28th, 1924. LEONARD ROGERS.

## THE CLINICAL SIGNIFICANCE OF CONSTIPATION.

*To the Editor of* THE LANCET.

SIR,—In his letter in THE LANCET of Dec. 20th (p. 1310) Dr. Reginald Miller draws attention to the importance of abnormal permeability of the intestinal (colonic) mucosa as the essential factor in the production of intestinal toxæmia. He allows, of course, that abnormal toxicity of the intestinal contents—owing to constipation or other causes—is also an important factor. It is an old observation that in extreme constipation there need be no great excess of indican and similar bodies in the urine, whereas there is very great excess whenever inflammatory diarrhœa occurs. Chronic constipation may exist for many years in persons whose diet is relatively plain and who avoid excess, without causing obvious signs of intestinal toxæmia, but when, at length, owing to infection or habitual use of purgatives or chronic irritation produced by the constipation, the colon becomes damaged, then signs of intestinal toxæmia begin to appear. It is at the latter stage that in certain persons a feeling of fatigue, distress, or somnolence may be noted after the bowels act. Such symptoms are apparently of toxic origin and tend to occur in rather

feeble individuals who for years have been accustomed to open their bowels every other day with purgatives. Following the fluid action of the bowels the damaged mucous membrane permits abnormal absorption of toxic material, doubtless especially from the fluid material left in the rectum. Such persons usually feel at their best on the days between those on which the purgatives act. I referred to this point in a discussion, Medico-Chirurgical Transactions, London, 1907, Vol. XC., pp. 615–616.

I am, Sir, yours faithfully,

F. PARKES WEBER.

Harley-street, W., Dec. 20th, 1924.

## PNEUMOCOCCUS MENINGITIS.

*To the Editor of* THE LANCET.

SIR,—At a combined section meeting of the Royal Society of Medicine, reported in your issue of Dec. 20th, 1924 (p. 1281), the opinion was expressed by Dr. J. G. Greenfield, and shared by Dr. D. Nabarro, that pneumococcal meningitis always kills. It may therefore be of interest if I give an outline of a case which fought a winning fight. My notes were made daily at the time.

In Washington, D.C., on Oct. 29th, 1921, I was called at 8.30 A.M. to see a lad of 16. During the night he had arisen, vomited, and gone back to bed, and at the hour named was found wildly delirious. Lumbar puncture was done at 9.30 A.M.

Dr. Clarence Rice, of Garfield Hospital, gave the following report on the fluid: "Markedly turbid. Protein: marked increase. Cells per c.mm. 16,000. Polymorphs, 92 per cent.; mononuclears, 8 per cent. Smears: many leucocytes, few lymphocytes, and a few Gram-positive, lancet-shaped, encapsulated diplococci having the morphological appearance of pneumococci. Culture: pure culture of pneumococci."

I called Dr. William Hough into consultation and asked him to assume control of the treatment. The same evening Dr. Hough drew off the spinal fluid. Next day this was repeated and again every day up to Nov. 7th, with the exception of Nov. 2nd. The fluid on the 7th was clear, contained eight cells per c.mm. and on culture was sterile. No further puncture was made. On Nov. 18th patient was out of bed for the first time. On the 22nd a note was made, "Somewhat slow in convalescing." He was eating well. There was ptosis of the left eyelid. On Dec. 5th, headache and vomiting; on the 7th, giddiness; on the 8th, much frontal headache with tenderness on percussion above right eyebrow. Blood leucocytes, which were 9100 on Dec. 7th, were now 14,200. On Dec. 9th Dr. Hough was again called. On the 11th Dr. Harry Kerr was also summoned, and it was agreed that there was cerebral abscess. On the 12th Dr. Kerr opened the skull at the spot tender on percussion, and at a depth of 4 cm. found pus. He drained with rubber tubing. Convalescence was anxious, but a fine recovery took place with unimpaired mentality.

An intranasal operation had been done 12 months before the illness, and since then life had been a burden to the lad on account of constant drip of presumably cerebro-spinal fluid. To the patient's great joy there was after the illness no return of the nasal flux.

I am, Sir, yours faithfully,

JAMES CAMPBELL, M.B., Ch.B.

Lerwick, Shetland, Dec. 24th, 1924.

## THE ROYAL COMMISSION ON NATIONAL INSURANCE: AN APPEAL.

*To the Editor of* THE LANCET.

SIR,—It seems certain that the evidence to be tendered by the British Medical Association will assume the principle of the National Insurance Act to be sound, and ignoring the more subtle moral and social effects, will concentrate on benefits, even advise extension. It is clear that extension points in the direction of State Socialism. Of course, the Association cannot plead opposing views officially—i.e., it is pledged by a group to the support of a political theory.

It is fatally easy to feel that all is well with the world if all is well with oneself. There is no doubt that many panel doctors are the richer for the Act; nor do they realise that from the Exchequer point of view that is an a priori objection. That section of us is organised. The objectors are not organised, but scattered, and whether from esprit de corps or the feeling that it is ungenerous to point to the fact that they are being taxed for the panel doctor, they never act, scarcely ever speak. But it is past that now; here is a chance of helping a nation forward, and no man should shirk the question. Two recent instances have shown how dangerous a course we are on: (1) the order to make a doctor responsible for the default of a parent to notify a birth within a given time, and (2) the savage fine of £1000 on a doctor; in both cases by, not a judicial or a legislative but an executive body. Unless there is a change no man henceforward is safe from the bureaucracy.

The Act takes illness as the norm and promotes health by provision of medical benefit. But all history shows that national health depends on the standard of living, especially of the poorer classes. The effect of the Act on the standard could clearly be seen up to the war, and the result was the largest increase in phthisical mortality in our records. The war had an almost unique effect on that standard; it raised it among the poor. The mortality began a huge decline during the war. Similar effects have been noticed in the U.S.A.; its appalling mortality has suffered a record decline. Now it is a contradiction in terms to raise that standard of living by a tax on production. Such a tax bears hard on the small employer, hurts not at all the large employer when once he has readjusted prices, bears cruelly on the working man with a family, is trivial to the young unmarried, unless it cause unemployment. It is unjust where it strikes, it is futile when it aims at the strong.

I repeat it is a grave national question, and I appeal to those men who have stood aloof, feeling it is no concern of theirs, especially to the consultants. Every doctor knows, perhaps has deplored, how the Labour Party is obsessed by the notion that the State is a bottomless well, from which every need can be supplied. For humanity's sake, and England's, do not by inertia encourage that pathetic and dangerous fallacy. The Commission has consented to receive evidence on the principle. To make that evidence effective, it is desirable to have the support of a considerable body of doctors. Will any sympathiser send me a postcard with his or her name, and any medical friend's (not pledging themselves to any particular doctrine), to say that he, she, or they deprecate any extension of the Act until the basic principle has been thoroughly reconsidered?

I am, Sir, yours faithfully,

B. G. M. BASKETT.

29, Daniel-street, Bath, Somerset, Dec. 27th, 1924.

## ENCEPHALITIS AND PLEOMORPHISM.

*To the Editor of* THE LANCET.

SIR,—Dr. F. G. Crookshank has commented favourably in your columns (see THE LANCET, 1924, vol. ii., p. 1311) on a recent communication of mine to the *British Medical Journal*.

He points out that Dr. Regan's case of atelectasis in poliomyelitis is a particular instance of a type of visceral paralysis which not infrequently occurs in this and allied diseases—for example, in encephalitis and in influenza with nervous symptoms. For is it not probably a fact that poliomyelitis and encephalitis are less distinct in nature than their names would suggest—that they tend, in fact, *to run into one another*, as also into the influenzas presenting cerebral and spinal complications, and so eventually into ordinary influenzas? Dr. Crookshank has provided us with an excellent example of that synthetic manner of thinking which medicine so badly needs after

several generations of analysis and pigeon-holing *à outrance*. And it is surely a hopeful sign that we have in the last three numbers of THE LANCET at least two other contributions in which this more comprehensive method of approaching medical facts is strongly evidenced. I refer to the "note" on alastrim and variola by Prof. Ricardo Jorge of Lisbon (pp. 1317 and 1366) and to the letter of Dr. James Young of Edinburgh on bacterial pleomorphism (p. 1207). Just as Dr. Crookshank presents encephalitis and poliomyelitis as offshoots from the common stock of influenza, so Prof. Jorge presents alastrim, varicella, cow-pox, and the "mild small-pox" of Gloucester as allied members of the varioloid family—different certainly, but no less certainly *related*. May it not be that *under certain conditions of time and place*, the different members of a group may run into one another—that one may in fact (i.e., clinically and for practical purposes) actually *become* another? Although such a conception undoubtedly militates against the dominant teaching—viz., that "exact diagnosis" (with its consequent opportunity for scheduling) should be the doctor's main concern, I am strongly inclined to believe that it is supported by a growing body of clinical experience.

Finally, the same principle which Drs. Crookshank and Jorge emphasise in the clinical and epidemiological field, Dr. Young illustrates from that of bacteriology, where he gives good reasons for believing that various of the best known forms of micro-organism may, as a result of various changes in the medium, develop from some kind of "bacterial plasm." I would press for a fuller recognition of pleomorphism in disease.

I am, Sir, yours faithfully,

Edinburgh, Dec. 28th, 1924. A. J. BROCK.

## PROF. JORGE AND CHRISTIAN SCIENCE.

*To the Editor of* THE LANCET.

SIR,—In an article by Prof. Ricardo Jorge (Lisbon), appearing in your issue of Dec. 20th, 1924, he makes a statement that Christian Scientists clamour for freedom from prophylaxis. The reverse of this is true, for Christian Scientists are taught in the Christian Science text-book, "Science and Health with Key to the Scriptures," by Mary Baker Eddy, p. 369, "The prophylactic and therapeutic (that is the preventive and curative) arts belong emphatically to Christian Science, as would be readily seen, if psychology, or the Science of Spirit, God, was understood." Christian Science teaches one how to gain the Mind of Christ, and to think as Jesus thought. This they find is the great preventive of disease as well as its curative method.

I am, Sir, yours faithfully,

CHARLES W. J. TENNANT.

Christian Science Committee on Publication,
Talbot House, Arundel-street, Strand, W.C.,
Dec. 20th, 1924.

## A DISCLAIMER.

*To the Editor of* THE LANCET.

SIR,—As the result of five minutes' courtesy to a correspondent introduced to me by friends in London, I have been made the subject of a blatant and vulgar article in a London daily paper. The article is full of errors, exaggerations, and inaccuracies. It was published without my having seen it and in the face of a specific request that my name should not appear in any article that the correspondent wrote. I have retired here for health, peace, and quiet, and the imagination and pertinacity of such correspondents will do much to frustrate my objects. I shall be grateful to you if you will publish this disclaimer.

I am, Sir, yours faithfully,

W. H. CLAYTON-GREENE.

Guernsey, Dec. 20th, 1924.

# Obituary.

## PROFESSOR HEDINGER.

MEDICAL science in Switzerland has to record a great loss. On Christmas Eve died at Zurich, after a short illness, Dr. Ernst Hedinger, University professor of pathological anatomy and histology. Born in 1876 at Schaffhausen, and educated in Berne, Hedinger studied medicine at the Universities of Berne, Munich, and Berlin, graduating in Berne. He then became in succession clinical assistant under such great teachers and research workers as Kocher (surgery), Sahli (internal medicine), and Jadassohn (dermatology). Having thus gained a wide clinical knowledge and experience he went to his favoured branch, pathological anatomy, becoming assistant to Prof. Langhans at the Pathological Institute at Berne. He was only 30 years old when he was appointed professor of pathological anatomy at the University of Basle, a post which he held till 1922, when he returned to Berne to succeed his late master. Hedinger was an indefatigable worker, the author of numerous dissertations chiefly on morphological subjects. His diagnostic skill was highly appreciated by all his clinical colleagues. In 1914 he undertook a special mission to South Africa on the invitation of the Union Government to investigate trypanosomiasis in cattle. This journey brought him into contact with General Botha and other South African statesmen, an experience which gave him a sympathetic understanding of the British Commonwealth at the beginning of the great conflict. Soon after his appointment to Basle Hedinger joined the editorial staff of the *Correspondenz-Blatt für Schweizerärzte*, the leading Swiss medical paper, which under his guidance was transformed into the *Schweizerische medizinische Wochenschrift* of enlarged size and raised scientific standard. Whether by mouth or by pen Hedinger had a natural gift for lucid exposition, and the present generation of Swiss medical men owes its working knowledge of pathology largely to his teaching.

## ANDREW ROBERT WARNER, M.D. OHIO,

EXECUTIVE SECRETARY, AMERICAN HOSPITAL ASSOCIATION.

ALTHOUGH Dr. A. R. Warner had been ill with heart disease for nearly a year, his sudden death recently at his home in Dearfield, Illinois, came as a great shock to his colleagues, since he was apparently on the road to recovery.

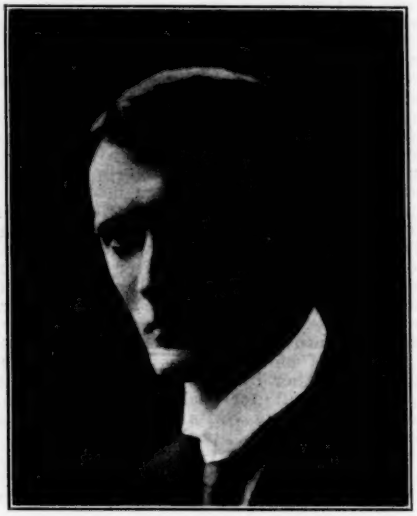
Dr. Warner was born in Pulaski, New York, in 1875. He graduated from Hamilton College in 1899 and from Western Reserve University Medical School, Cleveland, Ohio, in 1906. Subsequent to graduation he practised medicine in Cleveland for a few years. The first hospital position Dr. Warner held was that of assistant superintendent of Lakeside Hospital, Cleveland, and in 1913 he became its superintendent, a position he held until his appointment as executive secretary of the American Hospital Association in October, 1919. Dr. Warner was always deeply interested and active in the development of organised hospital activities. He was one of the founders of the Cleveland Hospital Council and of the Ohio Hospital Association and served as President of the Ohio Hospital Association in 1918 and 1919. He was also instrumental in developing and organising the American Conference on Hospital Service and served continuously as Vice-President of the Conference from the time of its organisation.

From the beginning of his hospital career he was actively interested in the work of the American Hospital Association, serving on several of its important committees. In 1918 he was elected its President. His earnestness and enthusiasm in the organisation of hospital activities won for him not only nation-wide, but international recognition.

## BERTIE RONALD GORDON RUSSELL, M.D. ABERD.

THE death of Dr. B. R. G. Russell on Dec. 22nd, 1924, at the early age of 44, after a short illness, is a grave loss to the serious investigation of cancer in this country. Russell was educated at the Grammar School and Marischal College, Aberdeen, and was one of the younger members of the school of pathology founded by the late Prof. Hamilton. After graduation he studied for a year under Marchand in Leipzig and returned to Aberdeen to take up the McRobert Fellowship for Cancer Research. While holding this appointment he joined the staff of the Imperial Cancer Research Fund as a voluntary worker in 1907, and in 1908 became a member of the ordinary staff of the Fund.

During the war he served in the Royal Army Medical Corps, at first at Woolwich and later at Malta. His health broke down in his second year at Malta, and



DR. GORDON RUSSELL.

he was invalided home out of the army. After a year at Southbourne Sanatorium he returned to work in London till the end. Russell's contributions to the experimental study of cancer were notable, and all characterised by thoroughness and technical competence. The histological analysis of the immunity to tumour transplantation, the development of sarcoma in the stroma of transplantable carcinoma, and the phenomena of concomitant resistance during progressive growth, he found in tangled confusion and left in order. These contributions all belong to the period before 1914. In the period after 1918 his researches fall into two categories. To the first belongs the work on the production of sarcoma by the subcutaneous inoculation of tar. The second comprises his studies on respiration and carbohydrate metabolism of isolated tissues, normal and cancerous. These researches led to a recognition of apparently specific differences in pentose metabolism, between normal and cancerous tissues of the mouse and rat. He was engaged on chemotherapeutic experiments based on these differences at the time of his death.

The thoroughness and objective clarity of all Russell's work were expressions of his critical and original mind, qualities which made him a touchstone in the laboratory, for men or work. The flawless courage with which he faced the situation following his breakdown in health, rigorously husbanding his energies for the one purpose of his investigations, will remain an enduring memory to those who worked with him.

# The Services.

### ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. A. Thompson is placed on retd. list, with the rank of Surg. Capt.

Surg. Lts. G. B. Tarring to *Spenser*, on recommg.; R. Burns to *Malcolm*; C. Joiner to *Royal Sovereign*; and E. J. K. Weeks to *Eagle*.

### ROYAL ARMY MEDICAL CORPS.

Capt. T. Young relinquishes the temp. rank of Maj. on ceasing to be empld. as a Dep. Asst. Dir. of Hygiene.

Capt. F. A. Roddy retires, receiving a gratuity, and is granted the rank of Lt.-Col.

#### ARMY RESERVE OF OFFICERS.

W. G. Hazelton, late Cadet, Belfast University Contgt., O.T.C., to be Lt.

#### MILITIA.

Maj. A. R. Dale relinquishes his commn. and retains the rank of Maj.

#### TERRITORIAL ARMY.

Maj. A. Walker resigns his commn. and retains the rank of Maj. with permission to wear the prescribed uniform.

# Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the undermentioned subjects:—

*Surgery.*—A. H. Allam, St. Mary's Hosp.; D. T. Jenkins, Edinburgh; A. Mishriky (Sect. I.), St. Mary's Hosp.; and J. Wilson, Leeds.

*Medicine.*—S. W. Cuff, St. Bart.'s Hosp.; D. T. Jenkins, Edinburgh; T. McD. Kellough and F. R. Ratnagar, Guy's Hosp.; C. C. Taffs, St. Thomas's Hosp.; and R. D. M. Tims, Cambridge and St. Thomas's Hosp.

*Forensic Medicine.*—C. L. Copeland, Univ. Coll. Hosp.; T. G. L. Davies, St. George's Hosp.; R. Norrie, St. Andrews; K. Samaan, Manchester; P. B. Skeels, Guy's Hosp.; W. T. Swanton, Cork and Charing Cross Hosp.; C. C. Taffs, St. Thomas's Hosp.; R. D. M. Tims, Cambridge and St. Thomas's Hosp.; and C. W. Warne, Guy's Hosp.

*Midwifery.*—W. T. Swanton, Cork and Charing Cross Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: K. Samaan, W. T. Swanton, and R. D. M. Tims.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful in the subjects indicated:—

#### FINAL M.B. AND CH.B. EXAMINATION.

R. S. Adam, J. K. Barr, C. E. W. Bower, C. V. Brown, Stella H. Brown, Elsie Catlow, William Chadwick, S. F. Clegg, Jenny D. Craig, Mary S. Davies, T. E. Davies, Stanley Devine, Florence M. Duckworth, Charles Eccleston, J. D. Farquhar, Leo Fay, R. A. Ferguson, Anne H. Glancy, G. H. Hayle, A. H. Heyworth, J. N. Hudson, Elizabeth G. Humble, P. G. Johnson, A. M. MacGill, H. T. Simmons, A. B. Slack, Robert Slater, A. R. Somerford, Ronald Walshaw, S. E. Ward, Hugh Whittle, R. M. Williams, S. P. Wilson, Frank Yates, and J. M. Yoffey.

*Forensic Medicine and Hygiene and Preventive Medicine.*—Madge E. Edwards and Ethel Morris.

*Forensic Medicine.*—A. R. Addey-Redfern.

*Hygiene and Preventive Medicine.*—William Mottershead, Samuel Whalley, and P. B. Wood.

*Obstetrics and Surgery.*—C. H. Bamford, Soloman Bernstein, N. W. Bolton, Lilian Bond, G. H. H. Booth, Geoffrey Coope, John Crook, T. A. Danby, A. A. Davis, N. E. Delaney, Kathleen Dickinson, L. F. Evans, Mary Evans, Miriam Florentin, J. B. Fulton, E. A. Gerrard, E. St. G. Gilmore, Riad Girgis, Mary Harburn, May Johnson, Walter Johnson, J. T. C. Keddie, Barbara M. Knight, G. F. Langford, G. H. March, C. T. Marshall, E. A. Marson, S. L. Micklow, R. M. Pearce, Archer Pearson, Joan Robinson, M. P. Sagar, N. F. Seed, W. H. Shepley, Joseph Shlosberg, Agnes G. Smiley, F. H. Smirk (distinction in Obstetrics), Lois Stent, Jane B. Stubbs, Jacobus Viljoen, J. C. Wilson, Reginald Wood, and N. A. J. Young.

*Obstetrics.*—Frances H. Bowden, T. K. Clifford, S. J. Firth, I. H. Freedlander, T. S. Hanlin, E. P. Johnson, W. D. Mitton, Francis Reynolds, B. R. Sandiford, A. D. Shubsachs, and W. S. Slater.

#### THIRD M.B. AND CH.B. EXAMINATION.

*Pathology.*—J. K. Anderson, Frank Appleton, R. H. Barnes, Helen G. M. Bennett, Soloman Bernstein, George Bridge, Gladys Brocklehurst, R. S. Davidson, Margaret Dyson Ernest Firth, Alec Fleming, C. F. Garfit, J. S. Goller, Basil Haring, Fanny Howe, George Metcalfe, C. T. Mills, Joseph Parness, Richard Pendlebury, Marjorie Reekie, Leonard

Rosenthal, Kathleen Sheehan (with distinction), Maurice Sheehan, Florence V. Stephen, R. H. Tootill, Vera Urmson, G. R. Walker, and Florence Whitrow.

*Pharmacology.*—Doris Bernard, Soloman Bernstein, Frank Cort, H. V. Crabtree, Margaret Egan, Arthur Hancock, Ernest Heard, H. H. Jackson, Nora Ridehalgh, and Herbert Townley.

UNIVERSITY OF DURHAM.—At a recent Convocation the following degrees were conferred :—

*Doctor of Medicine for Practitioners of Fifteen Years' Standing.*—Percival Henderson and Ernleigh G. D. Milsom.

*Bachelor of Medicine and Bachelor of Surgery.*—Elizabeth M. Anderson, Siegfried Annecke, Kathleen A. M. Ayton, Dorothy I. Brown, Alfred H. F. Cole, Joseph Davis, William H. Denholm, Charles F. Fairlie, John Famulton, Bertha Flintoff, Donald R. C. Grey, James B. Hartley, Robert E. Holme, Harold V. Ingram, Alan G. Ogilvie, Frank P. Rust, and John Stokoe.

*Licence in Dental Surgery.*—Frederick J. Gilbertson.

UNIVERSITY OF LIVERPOOL.—Vice-Chancellor J. G. Adami, in his address to the new graduates of the University of Liverpool on Dec. 17th, said that the mere obtaining of a degree of bachelor was insufficient for a student who wished to make his mark in the world and to serve his country. More and more was it necessary, he said, especially in science, for a man or a woman to undertake a period of special work and special research. For the first time the University now conferred the degree of Master of Orthopædic Surgery. The degrees of Bachelor or Master in Medicine and Surgery qualified men and women to be practitioners of medicine, but for those who wished to specialise, the preparation was inadequate. If a man was interested in a particular branch,—and the number of specialists in medicine was increasing year by year—the only way he had of showing himself an expert, and it was a most imperfect way, was by his joining the staff of one of their large hospitals and then awaiting an appointment as one of the members of that staff. The universities of this country did not offer any special training to such a man in his particular subject, and did nothing to show to the public that he was thoroughly well trained.

GUY'S HOSPITAL.—The bicentenary service of commemoration will be held in St. Saviour's Cathedral, Southwark, London, on Tuesday, Jan. 6th, at 12 noon.

CHRISTIANIA, the capital of Norway, will from Jan. 1st, 1925, resume the ancient name of Oslo, borne by the capital founded by Harold Haardrade in 1058, which was destroyed by fire, and replaced in 1624 by Christian IV. of Denmark.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—From Jan. 5th to 31st the Royal Eye Hospital (Southwark) will hold a course in Ophthalmology, consisting daily of the exhibition of clinical cases, followed by a lecture on Important Diseases of the Eye. There will be a special course in the Diagnosis and Treatment of Common Diseases of the Nervous System at the West End Hospital for Nervous Diseases from Jan. 5th to 31st. The course will take place in the Out-patient Department at Welbeck-street. Dr. Porter Phillips and Dr. Thomas Beaton have undertaken a series of nine lecture demonstrations on Psychological Medicine, beginning on Jan. 6th. Copies of the syllabus may be obtained on application to the Secretary to the Fellowship, 1, Wimpole-street, London, W. 1.

## THE NEW YEAR HONOURS.

A SHORT list of New Year Honours reaches us as we go to press; it includes the names of five members of the medical profession on whom a Knighthood has been conferred. They are Dr. John Campbell, senior surgeon to the Samaritan Hospital, Belfast; Dr. T. Morison Legge, Medical Inspector of Factories, Home Office; Mr. Holburt J. Waring, formerly Vice-President of the Royal College of Surgeons of England and Vice-Chancellor of the University of London, surgeon to St. Bartholomew's Hospital; and Prof. Gowland Hopkins, Professor of Biochemistry in the University of Cambridge. Dr. Henry J. F. Simson, obstetric surgeon, West London Hospital, receives the K.C.V.O. We tender our congratulations to our justly distinguished colleagues.

# Medical Diary.

## SOCIETIES.

**ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.**

*MEETINGS OF SECTIONS.*

**Wednesday, Jan. 7th.**

SURGERY: at 8.30 P.M.
*Papers:*
Mr. Geoffrey Keynes: Fat-Necrosis of the Breast.
Mr. H. S. Souttar: Carcinoma of the Œsophagus.

**Thursday, Jan. 8th.**

TROPICAL DISEASES AND PARASITOLOGY: 5.30 P.M.
Lieut.-Colonel Sir Leonard Rogers: Points of Resemblance in the Epidemiology and Treatment of Leprosy and Tuberculosis.
Dr. Nathaniel S. Lucas: Some of the Infections of Captive Animals.
Dr. Lucas will show Microscopic and other Specimens to illustrate his Paper.

COMPARATIVE MEDICINE, DERMATOLOGY, EPIDEMIOLOGY AND STATE MEDICINE } Members of these Sections are cordially invited to attend this meeting.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
*Specimens:*
Mr. A. C. Palmer: Primary Carcinoma of the Urethra in a Woman aged 56.
Mr. W. McK. McCullagh: Two Specimens of "Pseudo-Ovarian Cysts."
*Paper:*
Mr. J. Preston Maxwell (Peking): Osteomalacia in China (illustrated by means of photographs and lantern slides).

NEUROLOGY: at 8.30 P.M.
*Paper:*
Dr. R. M. Stewart: On a Case of Organic Spinal Hemi-anæsthesia, showing the Persistence of a Form of Sensation hitherto undescribed, and the Occurrence of Allocheiria and Heteræsthesia.

**Friday, Jan. 9th.**

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)
Cases will be shown.

OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)
*Papers:*
Dr. S. Russ and the President (Sir Arnold Lawson): A Note on the Influence of Ultra-violet Radiation of Nocturnal Animals.
Mr. F. A. Williamson-Noble: Inflammatory Pseudo-tumours of the Orbit.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MONDAY, Jan. 5th, to SATURDAY, Jan. 10th.—ROYAL EYE HOSPITAL, St. George's-circus, Southwark, S.E. Lectures and demonstrations on Diseases of the Eye. Daily, at 3 P.M., clinical cases, followed at 5 P.M. by a lecture.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Intensive Course in the Diagnosis and Treatment of Common Diseases of the Nervous System. Daily, at 5 P.M., lectures, including clinical demonstrations upon selected cases.—BETHLEM ROYAL HOSPITAL, St. George's Fields, S.E. TUESDAY and SATURDAY, at 11 A.M. Lecture demonstrations by Dr. Porter Phillips and Dr. Thomas Beaton.

ROYAL DENTAL HOSPITAL OF LONDON POST-GRADUATE LECTURES.
FRIDAY, Jan. 9th.—5 P.M., Mr. E. Rhodes: Some Clinical Aspects of X Rays in Dental Practice.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.
FRIDAY, Jan. 9th.—8.45 P.M., Clinical Meeting at the Miller General Hospital, Greenwich, S.E.

MANCHESTER MEDICAL SOCIETY.
WEDNESDAY, Jan. 7th.—4.30 P.M. (at the University of Manchester). Dr. J. M. W. Morison: Radiography of the Heart; Dr. R. Ollerenshaw: Surgery of the Astragalus; Dr. G. J. Langley: The Use and Abuse of Digitalis.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURES (at Whitworth-street, West Branch).
FRIDAY, Jan. 9th.—4.30 P.M., Dr. H. Clifford: Some Causes of Post-Climacteric Hæmorrhage.

# Appointments.

DELAFIELD, M. E., M.B. Camb., D.P.H., has been appointed Acting Head of the Department of Hygiene and Public Health, University College, London.

HANNA, W., M.D., B.Ch. Belf., D.P.H., Deputy Medical Officer of Health for the City and Port of Liverpool.

JACKSON, W. A., M.D. Liverp., Medical Officer of Health for the Compstall Urban District.

LOW, R. BRUCE, M.R.C.S., L.R.C.P. Lond., Medical Officer to the Welsh Board of Health.

MARSHALL, R., M.D. Durh., Hon. Physician to Noble's Isle of Man Hospital and Dispensary.

The Royal National Orthopædic Hospital: CLARKE, J. J., M.B. Lond., F.R.C.S. Eng., Honorary Consulting Surgeon; JONES, A. R., F.R.C.S., Honorary Surgeon; and PERKINS, GEORGE, M.Ch. Oxf., F.R.C.S. Eng., and HIGGS, S. L., B.Ch. Camb., F.R.C.S. Eng., Honorary Assistant Surgeons.

Certifying Surgeons under the Factory and Workshop Acts: BARRETT, C. P., M.R.C.S., L.R.C.P. Lond. (Folkestone); MCCLELLAN, A. G. (Cinderford); and BATE, J., M.R.C.S. (Bethnal Green).

# Vacancies.

*For further information refer to the advertisement columns.*

*Adelaide University.*—Marks Lectureship in Applied Physiology and Sheridan Fellowship. £750.

*Belfast, Joint Nursing and Midwives Council, Northern Ireland.*—Examiners of Midwives.

*Bermondsey Borough.*—Asst. M.O. for Maternity and Child Welfare. £600.

*Birmingham and Midland Eye Hospital.*—Res. Surg. O. £150.

*Bristol Mental Hospital.*—Second Med. Asst. £400.

*Cape Town University.*—Asst. to Prof. of Bacteriology. £500.

*Chiswick Hospital, W.*—Hon. Med. O. in charge of X Ray Dept.

*Derbyshire Royal Infirmary, Derby.*—Hon. Dent. S.

*Hampstead General, &c., Hospital, Haverstock-hill, N.W.*—Electro-Therapeutist. £50.

*Harrogate Infirmary.*—H.S. at rate of £150.

*Hospital for Consumption and Diseases of the Chest, Brompton, S.W.*—H.P. Six months. £50.

*Liverpool Port Sanitary Authority.*—Asst. Port M.O. £700.

*London Homœopathic Hospital, Great Ormond-street, W.C.*—Res. M.O. £100.

*London Jewish Hospital, Stepney Green, E.*—Clinical Assts.

*Lord Mayor Treloar Cripples' Hospital and College, Alton, Hants.*—Second Asst. Res. M.O. £250.

*Manchester Royal Infirmary.*—H.S. to Aural, &c., Depts. at rate of £50.

*Manor House Hospital, Golders Green, N.W.*—Jun. H.S. £150.

*Mount Vernon Hospital for Tuberculosis, &c., Northwood, Middlesex.*—Asst. Res. M.O. at rate of £200.

*National Hospital for the Paralysed and Epileptic, Queen-square, W.C.*—Hon. Anæsthetist.

*Northampton General Hospital.*—Third H.S. at rate of £150.

*Nottingham General Hospital.*—Res. Cas. O. at rate of £200.

*Parish of St. Mary, Islington Infirmary, Highgate Hill.*—Asst. M.O. £350.

*Pendleton, Infectious Diseases Hospital, Ladywell Sanatorium.*—Asst. R.M.O. £250.

*Queen Mary's Hospital for the East End, Stratford, E.*—Hon. Dental S.

*St. Mary's Hospital for Women and Children, Plaistow, E.*—Hon. Asst. P.

*Stoke-on-Trent, North Staffordshire Infirmary.*—H.S. £150.

*Swansea County Borough.*—Asst. M.O. £600.

*Swindon Borough Education Com.*—Oculist. 2½ guineas per session.

*Sydney University, New South Wales.*—Professorship of Obstetrics. £1100.

*Victoria Hospital for Children, Tite-street, Chelsea, S.W.*—H.P. and H.S. Each at rate of £100.

*West London Hospital, Hammersmith-road, W.*—Hon. Med. Registrar. £100. Also Hon. Obstet. Reg.

*West Riding Mental Hospital, Menston, near Leeds.*—Fourth Asst. M.O. £400.

The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Ayton, in the County of Berwick; at Bovey Tracey, Devon.

# Births, Marriages, and Deaths.

## BIRTHS.

LAING.—On Dec. 21st, 1924, at a nursing home in London, the wife of Major F. R. Laing, R.A.M.C., of a daughter.

MACLEAN.—On Dec. 25th, at Newcastle, Staffordshire, the wife of Dr. Bruce Maclean, of a daughter.

## MARRIAGES.

FORBES—PYMAN.—On Dec. 19th, 1924, at Holy Trinity, Brompton, Dr. A. Keith Forbes, M.C., to Esther Pyman, daughter of Mr. F. H. Pyman, Fitzjohn's-avenue, Hampstead, and Dunsley, Whitby.

## DEATHS.

CLARKE.—On Dec. 27th, 1924, at Montana, Switzerland, Cecil Clarke, M.D., M.R.C.P.

HAMMOND.—On Dec. 20th, 1924, William Hammond, M.R.C.S., L.R.C.P., of Park Drive, Golders Green, N.W., many years Chief Librarian to the Grand Lodge of England, aged 76.

PENTLAND.—On Dec. 21st, 1924, suddenly, in London, the result of an accident, Charles James Pentland, M.D. T.C.D.

THORPE.—On Dec. 19th, 1924, at Frogham, Fordingbridge, Hants, Arnold Edward Thorpe, L.R.C.P. & S. Edin., aged 63.

*N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Comments, and Abstracts.

## INDIVIDUAL INSURANCE IN THE FUTURE.[1]

BY HAROLD S. BEADLES, M.R.C.S.,
CHAIRMAN OF THE WEST HAM INSURANCE COMMITTEE.

THERE is not the least doubt that as time goes on the public services provided under the National Health Insurance Act are unfolding to the view of the student of social affairs a vista of health activity, more beneficial in its results than the promoters of the Act dared to anticipate at its inception. In spite of the many vicissitudes suffered by National Health Insurance administration since 1911—arising mainly out of the war—the financial assistance and medical attendance and treatment provided thereunder, has clearly demonstrated that with steadfastness of purpose, and the power of careful organisation, there is a possibility of achieving results in this phase of human life which must not be ignored by those responsible for the welfare of the community, if the peoples of the more thickly populated areas of the country are to be rendered capable of withstanding the unnatural strain put upon their bodies and minds by the present artificial existence known as modern civilisation. The elements of insurance have been provided for 15,000,000 persons as against 5,000,000 previously insured voluntarily. Nevertheless, we are even now only in a position to discern the fringe of the true health standard. The full splendour of good health can only be enjoyed by the establishment of well-defined and effective relationship between the various participles now wandering more or less haphazardly around the central and local administration of public affairs. The systems of health and public welfare administration which have been built up in this country during generations past, each very good in its service of that particular need which caused its creation, have now become much too numerous for the individual, whom they are intended to benefit, to thoroughly understand and use to the best advantage. The creation of funds for the operation of such systems is to-day also a matter of considerable complexity. The operation of the National Insurance Act has unmistakably demonstrated that continuance of this multiplicity of systems and complexity of finance is entirely unnecessary. It has shown the necessity of providing complete insurance for workers without the possibility of such workers being at any time "out of benefit." That which has acted so smoothly in health and unemployment insurance during the past 12 years can operate equally effectively and efficiently in other public welfare services. There are taxes for some services, local rates for others, precepts, rates and voluntary subscriptions for others, whilst compulsory contributions in other forms now play a big part in the social scheme. A number of the services have bases of incidence of charge peculiar to themselves and differing materially from those of others.

### *Imperial and Individual Services.*

It is claimed that there is no need for all these varieties. All public services might well be divided into two main categories—viz., (*a*) Imperial—i.e., those applicable to the community as a whole, and (*b*) individual—i.e., those applicable to and enjoyed by the individual particularly. In the former there would be included the navy, army, air force, and other defence services, diplomacy, government (central and local), police protection and allied services, education, construction and maintenance of roads, water-supply, housing, drainage and sewage, sanitation, prevention of pollution of air, water, and food, control of agriculture, shipping and transport, medical research, and many others. Under (*b*) would be grouped financial assistance in time of sickness and accident, maternity and unemployment, widows and orphans and old age pensions and allowances, medical attendance and treatment in the fullest sense, including all institutional, dental, ophthalmic, and specialists' services and nursing. It is the (*b*) group with which I am now dealing. To-day all political parties have announced their intention to alter and extend national insurance against sickness, unemployment, and accident, and to coördinate measures to these ends with provision for old age, widowhood, and orphanage. Yet of all the schemes so far expounded not one would seem to aim at total insurance for all social "individual" services.

### *Different Payments for Different Conditions.*

The Insurance Acts have further shown the inequity of having different payments for different conditions. It is

[1] An address delivered to the West Ham Insurance Committee.

difficult to see why, if sickness is to be the subject of insurance, the benefit derived therefrom, when sickness falls upon the insured, should be something short of the benefit derived from employment. Sickness places a far greater strain upon the household exchequer than good health. Therefore sickness pay should at least bear adequate proportion to good health pay. At present the sick pay is 15*s.* per week, whilst unemployment averages 50*s.*, compensation for accident 30*s.*, and that for old age 10*s.* Similar benefits of insurance should apply to old age, unemployment and the other ills to which the great majority of the working people are heir. Subject, of course, to family responsibilities, these should be equal to say 30*s.* for the man: when it would be unnecessary to distinguish whether a person is prevented from working by illness, unemployment, accident, old age, or any other disability. The standard of living given by the insurance benefits should be regulated according to the disability which the benefit is created to counteract. At the same time all the necessary means available for the removal of the disabilities insured against should be brought into full operation on behalf of the individual as part of the insurance scheme. These would include domiciliary medical attendance and treatment, institutional treatment—surgical and otherwise, and nursing, and also the finding of employment. National insurance must primarily be for the benefit of the community and not for the individual, and for this reason the premium should cover all time of unemployment from whatever cause it may owe its creation. It must include all those who now come under the Poor-law. Many of these are the same people, temporarily unemployed, whilst others are unemployable for various reasons; but the State cannot afford to leave these out, if it desires a healthy nation. Some of the unemployable are now the greatest danger to the community.

*Administration Problems.*

The funds required for the provision of these individual services should be raised in manner somewhat similar to the present system of national insurance so far as they would be collected through the medium of stamps purchasable at the post office. There should, however, be one form of stamp for all purposes, the face values being graduated from a minimum to a maximum by not less than one penny. The primary function of the stamped card would be the check it would furnish upon the proper payment of contributions on behalf of the person employed. Contributions should be payable in respect of every person reaching employment age—viz., at the expiration of his or her school age; and should continue to be payable until either the age of 65 is reached—when the old age pension would be payable—or until certain agreed earning has been attained, or until proof that a certain standard of living was assured by private means. Such contributions should be at a rate per pound of earnings, probably sixpence to the worker, and could be charged in suitable proportion between the State, the employer, and the employed. During periods of unemployment through sickness or otherwise, the rate of contribution should be paid by the State and the insured person concerned, out of his cash benefits. The State's contribution to the benefits and administration, representing the State's interest in the social welfare of the individual, would be drawn from the funds derived by special taxation and revenues for imperial purposes, or as a first charge upon income tax.

The monies accumulated by the sale of stamps would pass through a central fund, controlled by the State, to local pools controlled by the administering local authorities.

*How to Meet Expenses.*

It is estimated that about £280,000,000 per annum would meet the expense of the personal services requirements of the community. This figure being arrived at as follows: Health £94,500,000, employment £85,500,000, both including cash payments, pensions (old age, &c.) £100,000,000. To meet this annual charge a levy of 2*s.* 6*d.* would have to be made in respect of every £1 earned in the country; apportionable between the State, employer, and insured person. This seems at first sight to be a large proportion of the country's wages bill, but it must be remembered that under this scheme the poor relief rates, a considerable proportion of the ordinary local rates, hospital contributions, and other central and local taxes and rates would disappear, whilst the present contributions under the Health and Unemployment Insurance Acts would also be merged. Moreover, much of the present wasteful method of collection of revenues—State and local—would be swept away.

*Control and Supervision.*

The State would control the collection of funds and supervise the apportionment thereof amongst the local authorities responsible for the actual administration of the benefits. The local authorities referred to should be constituted mainly of persons appointed by and from the present councils of counties and county boroughs supplemented by persons appointed by such councils and nominated from various interests concerned with the working of the scheme, due regard being paid in the making of such appointments to experience acquired by the persons selected in the public services which are to be absorbed thereunder. Medical benefit is at present administered by insurance committees, but only general practitioner attendance is provided for most of the insured and then only "if in benefit." Additional benefits are provided by some approved societies for some of the insured. It is now clear that the only way to provide complete medical attendance for the whole community is to place it under the control of one body, not separate approved societies or the present insurance committees, but an "ad hoc" committee of the county or borough council on the lines of the educational committees—which committee could administer all health matters and properly coördinate them. When contributions are taken compulsorily from a portion of the community, the contributors have a right to expect to be provided with equal benefits and on equal terms. The position of the deposit contributors is a serious menace to the general health, and so long as there exists a number of societies approved for the purpose of administration and giving different benefits to their members the name of "National" becomes a farce. The working of the Act has shown some of us that we cannot continue permanently to have such societies approved and that here again we shall have to set up committees of county and borough councils, which committees will administer not only health insurance but all other forms of social insurance, including those for sickness, accident, unemployment, old age pensions, and widows' pensions, when there will be no necessity for the present Poor-law system.

Our thanks are due to the approved societies for all the work they have done in the past, the friendly societies as the pioneers, and the great industrial insurance companies for the assistance of their wonderful organisations, but we and they must recognise that the time has come for changes marking the next stage in the development of the great social amelioration; and that they, as well as you as members of insurance committees, must give way to some administrative body more comprehensive in its constitution and more effective in its power.

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## PUBLIC HEALTH OF GIBRALTAR.[1]

THE "fixed civil population" of Gibraltar (i.e., the number of British subjects) at the end of 1923 was estimated at 16,165; in addition some 10,000 aliens and 1500 British subjects resident in La Linea come into Gibraltar daily. The birth-rate in 1923 (for the fixed population) was 22·57, and the death-rate 17·63 per 1000. The former was lower than in the preceding years since 1917, when it had been 22·3. The latter was lower than in the five years preceding, except 1921, when it had been 15·74 per 1000. With regard to the prevalence and control of infectious diseases, it is stated that not a single case of small-pox was notified throughout the year. Primary vaccination is compulsory, and since 1906 all children on arriving at the age of 12 years have to be revaccinated. "The population of Gibraltar is now one of the best protected communities in the world against small-pox, and although constantly exposed to the menace, a case of small-pox rarely occurs in Gibraltar." There were 19 cases of enteric fever, with two deaths; four cases in addition were landed from the Bay (one fatal). The local cases (with one exception) were all sporadic, and no direct evidence was obtained as to the cause. The water-supply was not incriminated. Diphtheria (21 cases, two fatal)[2] was more prevalent than in any year of the decennium (1914–23) except 1922, when there had been 30 cases with three deaths. Only 31 cases of measles were notified (two fatal), in contrast with the considerable prevalence in 1921 and 1922, when the cases had numbered 388 and 305 respectively. Twelve cases of Mediterranean fever were notified (one fatal). From 1914 to 1922 inclusive the total cases had only numbered 24, with two deaths. The notifications of pulmonary tuberculosis (48) were more numerous than in any year since 1913, when they were 63; but the deaths numbered only 22, a lower figure than in any of the ten years preceding. Influenza of a mild type prevailed throughout the year. The cases numbered 545, of which 394 occurred in the three months April to June; there were only two deaths in all. Scarlet fever appeared in epidemic form during 1923, for the first time, as far as can be ascertained from the city records. The cases numbered 218, of which 188 were under 15 years of age. The disease was generally of a mild type, and only five cases were fatal (2·3 per cent.). The cause of the outbreak was not clear. It was probably imported. A large amount of milk is brought into Gibraltar from Spain, but all such milk is boiled

[1] Gibraltar Garrison Library Printing Establishment, 1924.
[2] As stated on pp. 28 and 32. On p. 31 the deaths are stated as three.

before being distributed. In regard to the infantile mortality Lieut.-Colonel W. C. Smales, D.S.O., R.A.M.C., who presents this report, considers that the year was "an unsatisfactory one," the ratio being 109·5 per 1000, as compared with 69 for England and Wales (1923); wasting diseases and diarrhœa were the chief causes of death. A child welfare centre has been of great service, granting assistance to poor families, providing milk or virol, and instructing mothers in the preparation of food, nursing, &c. Under the "Destitute, Sick, and Tuberculosis Scheme" some 224 families have received outdoor relief, a large quantity of meat and milk has been distributed, and some 700 visits paid by the nurse.

## SOMALILAND.

A REPORT on this British Protectorate (which contains about 68,000 square miles, and has a population consisting mainly of Mohammedan people estimated at 300,000) for the year 1923 has been issued by Mr. H. B. Kittermaster, O.B.E., secretary to the administration. It states that owing to the excellent rainfall throughout the year there has been a very small influx of natives into the coast towns during the winter months, as compared with previous years, and this accounts for the fewer cases admitted to hospital. The health of the European population was good, and there were no deaths or invalidings; 1100 in-patients and 22,817 out-patients were treated in the hospitals of the Protectorate—viz., for scurvy, 6; ulcers, 4000; malaria, 205; relapsing fever, 96; small-pox, 0; influenza, 50; dysentery, 34; diarrhœa, 360; tuberculosis, 215; whooping-cough, 63; measles, 10; chicken-pox, 32; syphilis, 946; gonorrhœa, 266.

## THE PACKING INDUSTRY.

A SERIES of lectures delivered at the University of Chicago in the spring of 1923 have been published in book form.[1] They aim to give a generalised survey of the American meat packing industry, its background, its service, and its operations, intended for the instruction and assistance of those interested in this industry. They purport to replace by systematic instruction what the author of the introductory lecture describes as the casual mouth-to-ear system. They form part of the structural development programme of the Institute of American Meat Packers. The ground covered includes live-stock, the history and general economics of the packing industry, the packing plant; two lectures on what are termed "operations," an expression covering the conversion of the raw animal to the marketable food, the finance of the industry, science in the industry, and distribution of meat products.

The book contains little or nothing of direct interest to medical readers, but is full of information of a curious kind. Those who wish can learn the proper method for chilling hogs, the significance of "frozen credits," and that the well-meaning people who launched an eat-no-lamb campaign on the grounds that no lamb now would mean more mutton hereafter were guilty of an economic waste. It is fitting that from Chicago should emanate a glowing tribute to the hog—"that noble vertebrate, the hog—a most excellent fellow, not merely from a cold economic standpoint, but as a personality. Though calmly independent, he is always approachable; he does not curry favour; he is never forward; he lives and lets live. He is thrifty, but believes there is a time for rest and leisure. Democratic in his tastes and instincts, he would be a Liberal in politics. He accepts man as his friend and equal—truly a great and magnanimous fellow." The lecture upon science in the packing industry is of interest, and shows that science came into the industry late in the day long after it had been established on empirical lines. In consequence, we are told that much of it was thoroughly unsound and irrational, and could have been corrected at the start by a reasonable application of scientific methods. While chemistry and physics are given an important place, bacteriology is scarcely mentioned and would appear to be neglected.

## SANITARY PROBLEMS OF TROPICAL AMERICA.

As official delegate to the International Conference on the sanitary problems of tropical America, held in Kingston, Jamaica, July 23rd-30th, 1924, Dr. A. Agramonti gives a short account of his experiences in the *Revista de Medicina y Cirugia de la Habana* of Oct. 10th, 1924. The Conference seems to have owed its origin to the initiation of Dr. W. E. Deeks, the P.M.O. of the United Fruit Company—a great American trust with branches all over tropical America. To him and to Dr. G. Vincent, head of the International Committee of the Rockefeller Foundation, Dr. Agramonti pays a high tribute of praise. The usual tropical subjects were discussed—malaria, yellow fever, amœbiasis, as well as various problems in general medicine. The point which seems to have struck Dr. Agramonti most was the general agreement that every case of malaria must be treated on its merits and that no standard method, as taught in the United States, is possible. There seems also to have been a consensus of opinion that "alastrim" is only a modified form of variola, though the Jamaican doctors dissented. Dr. Agramonti compares the medical institutions of the Jamaican Government unfavourably with those of Havana, excepting only the mental hospital. After the Conference the delegates visited officially Honduras and Guatemala.

[1] The Packing Industry. By various authors. Chicago, Illinois: University of Chicago Press. 1924. Pp. 357. $3·00.

## ANTHOCYANINÆMIA.

THE condition of anthocyaninæmia, and the allied one of anthocyaninuria, give rise to a symptom almost as alarming as their names, for the patient's urine is coloured a brilliant red. However, anthocyanin is nothing more than the name of a pigment found in the common beet. Dr. H. O. Ruh and J. A. Garvin, of Cleveland, Ohio, U.S.A., have seen[1] as many as 30 children in whom the only complaint was red or "bloody" urine, in each case due to eating beets. Attempts to produce the condition experimentally were eventually successful. They find that the production of anthocyaninæmia depends not only on the quantity, but also on the quality of the beets ingested. Presumably, although no such case is recorded by the authors, a patient whose urine happened to be alkaline and who ate sufficient beets, would complain of a bright blue urine, for the pigment is an unstable compound of the nature of a glucoside, and has been suggested as an indicator on account of its property of changing colour according to the acidity or alkalinity of its solution.

## COLOURED BOOKS.

*To the Editor of* THE LANCET.

SIR,—I notice that when referring to various Government publications in your columns you occasionally speak of them as blue books, white books, green books, and so on. My ignorance of the ways of officialdom prompts me to ask whether these chromatic titles must vary to express the truth as regards H.M. publishers' taste in binding, or whether the term "blue book" is not sufficiently generic to include all official motley. To put the question concretely: can a blue book be pink?

Yours faithfully,

Dec. 28th, 1924. PUZZLED.

*** The term "blue book" is often used to cover publications of different hues. Perhaps it should not be so employed.—ED. L.

## TEXT-BOOKS AND INSTRUMENTS IN RELATION TO INCOME-TAX ASSESSMENT.

THERE appears to be a doubt in the minds of some of our readers as to claiming allowance in their income-tax schedule in respect of expenditure on books and instruments for professional purposes. The following exchange of letters is typical:—

*Practitioner to H.M. Inspector of Taxes.*—Last year you told me in conversation that a claim for allowances of income-tax in respect of the purchase of books or instruments was not allowable except in the case of renewals, and that no books or instruments purchased for use for the first time would be allowed for. I have recently been given to understand that this is not so. The Regulation appears to make no reservation or exception but to apply to any books or instruments which are required for professional purposes.

*H.M. Inspector of Taxes to Practitioner.*—I beg to inform you that renewals and replacements of books and instruments are only allowable for income-tax purposes. Additions, as distinct from renewals and replacements, are not allowable. The opinion of the Inspector of Taxes is in accordance with the present law and practice on the point. No allowance is made for additions or improvements, but only in respect of repairs, renewals, and replacements.

## WHO WAS JACQUES?

SURGICAL literature frequently uses the name spelt phonetically Jakes to denote a flexible catheter, but hesitates how to spell the name. The catalogues of surgical instrument makers contain numerous variants, sometimes in the same list. After considerable inquiry we learn that the right spelling is *Jacques*, and that the bearer of the name was head of the British rubber firm of Jacques, Coles and Fanshaw, now defunct. The catheter which goes by his name is of soft rubber, and is now made by other rubber firms in this country. So far as we can ascertain the name though French in form is not known in French literature, where the soft catheter goes by the name of Guyon.

[1] Ohio State Medical Journal, December, 1924, p. 763.